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Indian Information Series

VOL. III

Simla, July 15, 1938

No. 12

CONTENTS

	Page		Page
Lord Brabourne Takes Charge	1	Future Of Cotton Marketing	18
Hope For The Tuberculous	2	Punjab Mail Disaster	19
Bugti Unrest	7	One Year To Solve Maths. Problem	20
Excise Conference	7	Disorder In The Linseed Market	21
Land Of Devil's Cauldrons	8	Minimum Employment Age	22
Cheaper Paper For India	10	Indus Basin Water Scarcity	22
Building (Safely) On Sand	11	Military Officers' Pay	23
India's Irrigation Triumphs	12	International Labour Conventions	23
All India Cattle Show	15	Education In Ajmer-Merwara	23
Wardha Scheme Misconceptions	15	Man's Evolution Problem	24
Better Public Health	17		

LORD BRABOURNE TAKES CHARGE

New Acting Viceroy

PICTURESQUE CEREMONY AT SIMLA

Unofficial Eyewitness' Account

The following account of the ceremony at which His Excellency, Lord Brabourne, was sworn in was sent to his paper on June 25, by the Special Simla Correspondent of **THE HINDU**.

Lord Brabourne was sworn in to-day as Viceroy and Acting Governor-General before a large and distinguished gathering which included members of the Government of India, Punjab Government and officials of the Army and Air Force. The telegram announcing the departure of Lord Linlithgow arrived twenty minutes before the ceremony which started punctually at 4. It was a bleak and rainy morning but the sun came out brilliantly before the function.

Sir Shah Sulaiman, a Judge of the Federal Court, read out first the Oath of Allegiance, then the Oath as Governor-General, lastly as Viceroy in relation to Indian States. Lord Brabourne has a pleasant voice which carries far and went through the ceremony with great dignity.

After the Viceregal procession had returned from the Ball-Room where the ceremony took place, Their Excellencies insisted on shaking hands with everyone present and later mixed freely with the guests in the tea room.

The traditional ceremony attended the Swearing in. The Ball Room of the Viceregal Lodge, where the ceremony took place, gleamed like a jewel casket as the elite of Simla, many in resplendent uniforms, filled it.

Lord Brabourne in grey frock-coat and Lady Brabourne in beautiful China-green brocaded with big black hat and two black foxes

to match entered in procession and took their seats on the dais.

The warrant of the appointment was read by Mr. J. A. Thorne, Secretary to the Governor-General. Sir Shah Sulaiman, Judge, Federal Court, wearing the black gold embroidered gown and wig advanced to the dais and administered three oaths, namely, Oath of Fidelity to the King, Oath of Office as Governor-General and Oath as Crown Representative. Sir Shah Sulaiman read the Oaths and Lord Brabourne repeated the words after him.

His Excellency then took his seat in the Council. The Viceregal Flag was unfurled and a royal salute was fired. After the ceremony, His Excellency inspected the Guard of Honour furnished by a detachment of 1/7th Gurkha Rifles. Guests were presented to Their Excellencies and later entertained to tea. Both Lord and Lady Brabourne moved freely among them.

LADY LINLITHGOW IN LONDON—**HOPE FOR THE TUBERCULOUS****India's Key Problem**

A paper read before the East India Association and the Overseas League, London, on June 21, 1938, with Her Excellency the MARCHIONESS OF LINLITHGOW, C.I., in the Chair.

By Major-General Sir JOHN MEGAW, K.C.I.E., M.B., I.M.S. (Retd.)

Even the dark cloud of tuberculosis has its silver lining. A century ago in England 4,500 persons in every million died every year of tuberculosis : the number has now fallen to 650 per million, or about one-seventh of what it used to be.

Tuberculosis is a disease, or rather a group of diseases, all of which have one thing in common : they are caused by a special kind of microbe discovered by Robert Koch in 1882 and called the bacillus of tuberculosis.

Tuberculosis is a cosmopolitan disease ; it attacks people all over the world, except for a few isolated places which have remained free from contact with modern civilized conditions. The bacillus can attack any part of the body, but far more deaths are due to tuberculosis of the lungs than to all the other forms of the disease put together. In the great majority of cases the bacillus finds its way into the body by being inhaled into the air passages or by being swallowed with food or drink.

The general public have been thoroughly enlightened in the danger of spread of the infection by spitting : the penalties prescribed for indulgence in this filthy habit are widely advertised and too seldom imposed. But there is another habit which unfortunately does not cause the same feelings of disgust, although it is really far more dangerous—the habit of coughing in rooms or any kind of enclosed spaces which are occupied by other people.

When a person who has open tuberculosis of the lungs coughs he sends out a regular spray of droplets into the air : these droplets consist of sputum, and most of them are so small that they remain suspended in the air in much the same way as a puff of tobacco smoke. As each droplet may contain a large number of the bacilli you can realize how dangerous it is to breathe the air in the vicinity of an infected person.

The inhalation of disease microbes in this way is called "droplet infection," or more realistically "sputum spray infection". In the open air or even in the air of a well-ventilated room these droplets are so quickly carried away by air currents that there is little risk of infection except by inhaling the air within the actual zone of bombardment by the spray.

A Key Disease

Many other dangerous diseases are conveyed from man to man by droplet infection—for

example, influenza, which in 1918-19 destroyed nearly ten million people in India ; in fact, more people died within a few months from influenza than were killed by plague during the preceding twenty years. Pneumonia, bronchitis and diphtheria are examples of the diseases which are conveyed in this way.

The precautions which are effective in preventing the spread of tuberculosis by droplet infection will be equally successful in controlling a large number of deadly maladies, so that in this respect tuberculosis is a key disease.

The other chief method by which the bacillus enters the body is by swallowing infected food and drink. In this country a certain number of cases of tuberculosis are caused by drinking raw milk from tuberculous cattle, but in India people seldom drink unboiled milk, and, besides, very few cattle are tuberculous, so that this source of infection is negligible.

Unfortunately the bacilli of human origin have many opportunities for getting into the food and drink in India, so that alimentary infection can by no means be ignored. Other microbial diseases communicated by alimentary infection are cholera, dysentery and typhoid fever, so that measures directed against this method of conveyance of tuberculosis will prove equally effective in controlling these maladies. Here then is another way in which tuberculosis is a key disease. In fact, apart from the group of diseases carried by insects every one of the great killing maladies of India will be completely controlled by the measures which are appropriate for the control of tuberculous infection.

The Seed And The Soil

Although tuberculosis is always caused by a special bacillus, and cannot exist in the absence of this microbe, it would be utterly misleading to confine our attention to the bacillus. The bacillus is the seed of the disease, but from the practical point of view the soil on which the seed falls is equally important.

The soil is the human body, and there is abundant evidence that unless a heavy dose of infection enters a healthy and well-nourished body the seed will not produce a deadly crop of disease. The great majority of the people in this hall have been infected with tuberculosis at some time or other. What happens is that when the bacilli enter our bodies they begin to multiply, but, if we are well nourished, our defensive mechanism is stirred to activity and wages successful war against the bacilli. It is only when the dose of infection is excessive or when our powers of resistance are feeble that the microbe gains the upper hand.

There is reason to believe that when we have overcome an invasion by the bacilli of the disease our powers of resistance against further attacks are increased so that these inapparent forms of tuberculosis are often blessings in disguise. There is ample proof that these mild attacks of disease are of common occurrence. Careful examination of the bodies of adults who have died from accidents reveals the presence of the scars of the disease in the majority of cases. Even during life it is possible to obtain clear evidence of the previous existence of tuberculosis in many persons who have never shown signs of the disease.

In the course of the defensive reaction against the bacilli certain substances are produced in the body and these persist for years. Their presence can be detected quite easily by the tuberculin reaction which is positive in the majority of adults in many places. Even when the bacilli have gained the mastery to such an extent as to cause obvious signs of disease, it is usually possible to reinforce the defences of the body so as to bring about a cure. Hence the importance of early diagnosis. The true picture of tuberculosis is far different from that of the popular imagination.

The important point about the inapparent attacks of tuberculosis is that they indicate the impossibility of escaping from infection in existing conditions and the great importance of attention to the soil as well as the seed. The ideal is to eliminate the seed, but this is not practicable in the immediate future; we can, however, take comfort from the knowledge that even with partial control of infection there can still be a great degree of success in controlling the disease.

For many years it has been a matter of common knowledge that persons who are well nourished and who lead healthy outdoor lives rarely suffer from tuberculosis, but the clearest demonstration of the importance of nutrition was given during and after the Great War. During that period the death-rate from tuberculosis rose sharply in every country in which there was a great shortage of food, and the rise was directly proportional to the degree of shortage.

Recent work on nutrition has shown that not only tuberculosis but also many other diseases are greatly influenced by the state of nutrition of the body. Here again tuberculosis is a key disease.

Inherited Tuberculosis

The pessimistic outlook on tuberculosis has been greatly fostered by the belief that the disease is hereditary. Strictly speaking there is no such thing as inherited tuberculosis: the disease is always acquired.

Although infection may enter the body before birth such an occurrence is so rare as to be negligible, and for practical purposes we may regard the newborn babe as entering the world with a clean bill of health even when both parents are suffering from tuberculosis.

The only part played by heredity is that some people inherit a constitution which offers a low degree of resistance to infection, but all the evidence goes to show that nobody need be doomed to tuberculosis if the nutritional condition of the body is maintained and heavy doses of infection are avoided.

For concrete evidence that tuberculosis is easily controllable we can look at what has been happening in England. In the past twenty years the death-rate from the disease has fallen by nearly 50 per cent. During the same period the expenditure from public funds on anti-tuberculosis measures has risen enormously.

If one were to claim that the fall in the death-rate was due to the rise in expenditure you might be prepared to agree. But if public-health partisanship were to tempt anyone to make such a claim, his public-health conscience ought to step in and insist that the whole truth should be told. The truth is that the death-rate was falling just as rapidly during the pre-war years when little public money was being spent on special anti-tuberculosis schemes.

Tuberculosis experts are the first to admit frankly that the chief cause of the rapid decline of tuberculosis is improvement in the conditions of life of the people. By better housing and better hygienic conditions in general the spread of infection has been greatly diminished; by better food the soil has been rendered less suitable for the development of the seeds of the disease.

Now let us come to grips with the critics of our modern anti-tuberculosis measures. They argue that modern treatment prolongs the lives of the patients and so enables them to continue to spread infection and also to bring into the world more children with an inherited predisposition to the disease.

We do not hear such arguments from persons who are suffering from tuberculosis or from persons whose relatives and friends are victims of the disease.

If the problem were purely biological, and if the sole consideration were to stamp out the disease in the shortest possible time, the best policy would be to consign every infected person to the lethal chamber. Such is the logical conclusion of the argument that humanitarian measures are a waste of money. On the other hand we can claim that the combination of humanitarian relief measures with scientific prevention is yielding the happiest results.

The important matter is that victory over tuberculosis in this country is in sight, and if the present rate of progress is maintained there are people alive today who will be able to tell their children how the scourge of tuberculosis darkened the lives of the people in the bad old days of the first half of the twentieth century.

Statisticians delight in supplying us with figures which show a close relationship between the prevalence of tuberculosis and such things as the average number of rooms occupied by each family, the average food supply, and the average birth-rate. All these factors are important, but the relative influence of each cannot be measured with accuracy: better housing normally goes hand-in-hand with better food, a low birth-rate usually means smaller families, for which better food and more living space can be provided. An increasing population does not necessarily involve a worsening of hygienic conditions—for example, Sir Evelyn Wrench has recently stated that the French settlers in Quebec have increased from 60,000 in 1759 to nearly 5,000,000 at the present time. On the other hand an increase in population which is not accompanied by a proportionate growth in the production of the necessities of life must mean a lowering of economic standards and a corresponding deterioration in bodily health.

India's Special Features

The Indian situation can only be understood in the light of experience gained in other countries where reliable evidence is available about the conditions which govern the increase or diminution in tuberculosis. Unfortunately we have very unsatisfactory information about the prevalence of tuberculosis in India, but as the disease is cosmopolitan and is governed by the same basic principles in every part of the world, all that I have said has a definite bearing on the Indian problem.

The causes of the terrible prevalence of the disease in England during the nineteenth century are just the same as those which operate in India today, and the causes which have brought about so rapid an improvement in England will certainly give the same results if applied in India. In a discussion on the tuberculosis situation in England it has been possible to speak in a definite manner, but in dealing with the position in India one has often to fall back on speculation and surmise.

Nobody can tell, even approximately, the death-rate from tuberculosis in India as a whole, nobody can describe the geographical distribution of the disease, and nobody can tell to what extent it is increasing. In the absence of authentic data we must make the best use we can of such evidence as is available. In the cities and large towns of India the deaths from tuberculosis of the lungs are recorded. In Cawnpore the latest yearly death-rate was 4,600 per million of population, or much the same as it was in England a hundred years ago. In Calcutta it was 2,500, and in Bombay 2,000.

These rates probably err greatly on the side of optimism, as many deaths from tuberculosis are returned under the headings of "Fevers" or "Other Respiratory Diseases".

The death-rate from tuberculosis among girls and young women who live in purdah in the large centres of population is appalling; it is several times higher than that of males belonging to the same age group.

An Increasing Menace

Medical men in India are almost unanimous in declaring that the disease is increasing rapidly and that it is extending to rural areas which were formerly free from infection. They also report that when the disease spreads to new localities it assumes a more virulent form than in places previously affected.

This is what would be expected, for it is well known that Gurkha soldiers and French colonial troops coming from isolated regions are far more liable to rapidly fatal attacks of tuberculosis than soldiers coming from places where the disease is common. In the case of Gurkhas and other people in unaffected localities the defensive mechanism of their bodies has not been stimulated to activity by previous mild attacks and so they are virgin soil on which the bacillus thrives without restraint. It may be noted that when proper care is taken to prevent infection among Gurkhas they remain perfectly healthy, so that we are not compelled to fall back on the unsatisfactory policy of controlling the disease by permitting mild attacks to occur.

A few years ago I attempted to make a rough-and-ready survey of the number of cases of tuberculosis and other diseases in the rural areas of India. The method adopted was to issue a questionnaire to a large number of doctors in charge of dispensaries in typical agricultural villages throughout India. The doctors were asked to state how many persons were suffering from tuberculosis in their own village. An estimate based on their replies suggested that there were $1\frac{1}{2}$ to 2 millions of cases in India. Not even a moderate degree of accuracy is claimed for this estimate; nothing short of a careful personal survey by trained men will give a convincing reply to the question—how many people are suffering from tuberculosis in India?

I have also tried to obtain some evidence on the subject by examining the statistics published every year in the Public Health Commissioner's Report on the health of the prisoners and troops in India. From these it appears that admission-rate for tuberculosis of the lung in prisons was 5.5 *per mille* in 1895, that it rose rapidly during the next ten years to the high figure of over 9 *per mille*, and thereafter declined steadily to 5 *per mille* by 1935, or somewhat less than the figure of forty years previously.

We cannot derive much comfort from these figures, for the reports of the earlier years state that most of the cases resulted from infection contracted in the jails, and recognition of

this fact was followed by the introduction of special measures for the isolation and special treatment of tuberculosis prisoners.

These reforms must have caused the great fall which is shown in the admission-rate during the latter part of the forty years' period with which we are dealing. The slight reduction in the admission-rate—namely, from $5\frac{1}{2}$ to 5 *per mille*—during the whole period of forty years is not encouraging, seeing that during the same period the general health of the prisoners improved in a striking manner, as is shown by the fall in the total death-rate from 27.6 to 11 *per mille*. If the present admission-rate for tuberculosis of the lung in Indian prisoners be regarded as a fair index of what is happening in the country as a whole, it would appear that close on 2,000,000 of the people of India and Burma are suffering from tuberculosis of the lungs. This figure corresponds closely with the estimate arrived at in the village survey, but here again it is unsafe to pin great confidence on the figures.

During the same period of forty years the number of cases of tuberculosis of the lung in Indian soldiers fell from 2.3 *per mille* to 1.9, but this small reduction contrasts sharply with a fall in the death-rate from all diseases in Indian troops from 11.6 to 2.15.

Another significant fact is that the cases of tuberculosis of the lung in British soldiers in India fell during the same period from 4.8 *per mille* to 1 *per mille*, although the present death-rate in British troops from all diseases is appreciably higher than that of the Indian troops.

This reduction in the tuberculosis rate among British troops is what would be expected from the combination of two factors: one being the improved hygienic conditions in which the soldiers are living, and the other the fall in the tuberculosis rate of the population from which the soldiers are recruited.

In the case of the prisoners and Indian troops similar improvements in hygienic conditions have brought about very satisfactory results in the case of all other diseases, but have had little effect on tuberculosis. The suggestion, therefore, is that the incidence of tuberculosis in the places from which the prisoners and soldiers come must be rising.

The number of patients under treatment for tuberculosis in the hospitals in India has greatly increased during the past few years, but here again we cannot be sure that the figures give a true index of the prevalence of the disease. Making the fullest allowances for the fallacies which are inherent in the preceding estimates, all the evidence points so strongly to a serious increase in the disease that an accurate survey of the situation is urgently needed.

Need For Surveys

The medical research workers of India at a recent conference expressed their regret that so little work had been done in India on tuberculosis research, and recommended that

provincial authorities be urged to carry out accurate tuberculosis surveys in their areas. If we are to conduct a successful campaign we must at the outset find out the numbers and disposition of the opposing forces.

Does this mean that we ought to do nothing till we have completed the survey? Emphatically no!

Even though our knowledge of the situation in India is admittedly imperfect, it is quite enough to show not only the crying need for immediate action but also the lines on which action should be taken.

India is fortunate in having at her disposal the accumulated experience of other countries in which the tuberculosis problem has already been closely studied with the result that it is being successfully solved.

Anti-tuberculosis measures are of two main types, preventive and remedial. Preventive measures must deal with both the seed and the soil, they must aim at controlling the spread of infection and at raising the bodily resistance of the community. The ideal means of preventing the spread of infection would be to isolate under proper control everyone who is infectious. This measure would involve the construction of sanatoria, with accommodation for at least two million patients and the maintenance of a large and costly army of skilled doctors and attendants. Even the most prosperous Western countries are far from having attained the ideal of providing one bed for every person suffering from infectious tuberculosis, so that any suggestion of this kind must be ruled out as being utterly impracticable in India.

There is no need to be unduly discouraged because of the obvious impossibility of doing for the people all that is necessary. In the case of tuberculosis and all other public health problems a far better way is to teach and persuade the people to do things for themselves.

The control of tuberculosis in England has been brought about, not by the Government, but by the people.

Things done for the people must necessarily be expensive and of temporary benefit, whereas things done by the people themselves are both economical and durable.

The spread of infection in India can only be prevented by a process of educative persuasion. The people must be taught how droplet and alimentary infections are conveyed and how they can be avoided. To carry out the educative campaign we have at our disposal the schools, the printing press, public lectures, the cinema and above all wireless broadcasting.

A word of warning must be said against laying undue emphasis on the horrific aspects of the disease. The fear of tuberculosis already exists; in some places it amounts to a state of unwarranted panic. It is a case of a little learning being a

dangerous thing. Stress must always be laid on the maintenance of health and the means of avoiding infection rather than on the horrors of disease.

There is much to be said for directing propaganda against all infectious diseases of the respiratory and alimentary systems rather than against tuberculosis alone.

If it came to be understood that everyone who has a cough ought to be kept in the open air or isolated in a well-ventilated room tuberculosis would lose much of its power to terrorize and demoralize its victims.

Fatal delay in seeking treatment is often due to the dread of hearing the diagnosis, which is regarded by many people as a sentence of death.

Suitable accommodation in a verandah or open "lean-to" can be provided for the patient at a trifling cost, at any rate in rural areas : a member of the patient's family can be trained to look after the patient.

From ten to twenty patients can be treated in their own homes for the cost of a single patient in a modern sanatorium. A useful piece of research would consist in devising models of suitable shelters made of materials available in the various localities.

Preventive measures which aim at building up bodily resistance against the bacillus are essential parts of the programme ; these constitute a complex problem in themselves. The Governments of India would find it just as impossible to provide proper food and housing for everyone as to build and maintain modern sanatoria for all the patients who need treatment. Here again they must fall back on the plan of persuading the people to do things for themselves.

Education In Life Planning

The key unit in every State is the family, and the only prosperous States are those in which each family lives a well-planned life.

The heads of every family must, therefore, be taught how to plan a satisfactory existence for those who are dependent on them. Here is where the responsibility of governments comes in ; it is their duty to provide sound education in life planning and to persuade the people to adopt the plans which have been prepared.

The most difficult part of the task is to bring about the change in the outlook of the people without which better conditions of life are unattainable. Inefficient methods of agriculture, wasteful customs, early and improvident marriages, are some of the chief handicaps which the people of India have imposed on themselves. Unless these can be thrown off, Nature will continue to maintain the balance between population and food supply by tuberculosis and other cruel methods.

In fact, all the world over people must choose between planning their lives as they would

have them to be or having them planned for them by the blind and brutal forces of Nature.

Can the outlook on life of 350 millions of people be changed ?

A few years ago such a question would have been received with derision, but after the recent demonstrations given by Russia, Germany, and Italy everyone must admit that incredible changes in the mentality of great nations can be wrought by persistent propaganda.

Far be it from me to suggest that we ought to copy any of the political systems of these countries, but we might well adopt their methods of mass suggestion in the good cause of promoting the welfare of the people. In doing this we need not interfere with religion or curtail liberty in the slightest degree.

There is good reason for believing that if one quarter of the money which is now spent on education in India were allotted to a scheme of instruction in life planning, the problem of tuberculosis and most of the other great problems could be solved.

The first essential is to have a sound plan, and the preparation of such a plan demands the co-operation of men with practical knowledge of agriculture, industry, economics, hygiene, education, and, above all, of men with a sympathetic understanding of the psychology of the Indian peasant.

Technical advisers are needed, but the knowledge of the various kinds of experts must be co-ordinated and translated into simple language which will bring home to the people the causes of the ills from which they suffer and the means by which these can be cured.

This sounds quite simple, but in reality the scheme will call for a lot of hard thinking by the best brains of India, helped by the best brains of the countries which have already solved most of the problems which India has to face. When once a plan has been prepared the rest will be easy ; it will only be necessary to carry out a system of mass propaganda on the lines that have always proved successful.

Encouraging Signs

There are encouraging signs that those who are responsible for the welfare of India realise the nature and gravity of the problem and the responsibility of Government for initiating action. Let me first quote the following statement from the Report of the Royal Commission on Agriculture in India. This may fairly be assumed to have emanated from Lord Linlithgow :

"The demand for a better life can in our opinion be stimulated only by deliberate and concerted action to improve the condition of the countryside, and we have no hesitation in affirming that the responsibility for initiating the steps necessary to effect this improvement rests with Government."

Everyone will agree that His Excellency is doing everything in his power to discharge a responsibility which ten years ago he little dreamt he was imposing on himself.

Again, we have the statement by the President of the party which has become responsible for the welfare of more than half of the people of British India, that he is greatly concerned at the economic and population situation, and that something will have to be done.

It now only remains for public opinion to demand the action which Government will be only too glad to initiate.

Medical Relief

The campaign against tuberculosis must include humanitarian effort for the relief of the sick.

Prevention and cure are going hand-in-hand in England with the happiest results; in India there are special reasons for supplying medical aid to the victims of the disease; the chief of these is that before any preventive action can have a hope of success the goodwill of the people must always be enlisted by the cure of disease. Apart from this, sanatoria and dispensaries have great educational value and serve as centres for propaganda work.

There is little need to stress the importance of medical relief in dealing with tuberculosis; the public will insist on having treatment, and it is the business of Governments to see that they get it.

I have tried to show you that tuberculosis is a key problem of India and that its solution will mean far more than the conquest of one terrible disease.

Let me close by appealing to you for your sympathy and help in the splendid effort which is being made by the Chairman of this meeting, Lady Linlithgow.

Her chief aim is doubtless the relief of suffering, but the work cannot fail to give a great stimulus to the campaign for the eradication of the disease.

CAUSES OF BUGTI UNREST

TRIBAL DISPUTES

The situation caused by the recent disturbances in Bugti country has been under the consideration of the Agent to the Governor General in Baluchistan.

The Bugti are a Baloch tribe, composed originally of diverse elements, whose higher tribal structure is of a *tumandar* with *muqaddams* from each section. Both *tumandar* and *muqaddams* hold office at the will of their tribesmen, subject in the case of the *tumandar* to the approval of Government. Both offices are hereditary, or at least confined to certain families. The internal administration of the tribe is carried out by the *tumandar* in consultation with the sectional *muqaddams* and Government has so far not attempted to interfere in it, except in most important cases. Government controls the external relations of the tribe.

There is no evidence that the Bugti tribesmen wish to alter the present tribal structure, which is in accord with their mode of life and thought.

There has, however, been considerable discontent with the *tumandar's* action in certain land and other disputes, which has resulted in the emigration of not a few Bugtis from their country. From a base in the Upper Sind Frontier, to which district there is also a large seasonal migration of Bugtis, they have conducted propaganda against the *tumandar* and have received the support of certain political elements in British India.

At the head of these malcontents is the *tumandar's* eldest son, **Abdur Rahman Khan**, whose arrival in Bugti country was the immediate cause of the recent disturbances. In 1926, Abdur Rahman Khan was adjudged by a representative jirga of his tribe to be of low birth and debarred from succeeding to the *tumandari*. He had for some time been intriguing against his father, and it was found necessary to remove him from Bugti country. He was given an appointment of Tahsildar in the Baluchistan Administration and a share in the tribal allowances which from time to time was withdrawn as a result of his continuing intrigues.

Assiduous propaganda has been conducted in the Press that the Bugti tribe wishes to have Abdur Rahman Khan as its *tumandar*. There is in fact little reason to suppose so.

The so-called *dastarbandi* ceremony was attended not by 15,000 tribesmen but by about 500, of whom the majority were Marettas, a low born section that is distributed throughout the tribe. With two exceptions no sectional *muqaddam* attended the ceremony.

The situation appears to be that though at the moment there is considerable discontent in the tribe with the *tumandar*, there is little desire for his removal if the existing disputes can be satisfactorily settled, and certainly no desire for his replacement by Abdur Rahman Khan.

It has accordingly been decided, with the approval of the Government of India, that Government shall assume complete responsibility for the settlement of internal disputes, as it has already done in the case of the neighbouring Marri tribe. As a result of this decision the disputes which have caused such discontent will now be brought under review by Government Courts.

EXCISE CONFERENCE PROCEEDINGS

A summary of the proceedings of the Excise Conference held under the chairmanship of Mr. A. H. Lloyd, Member, Central Board of Revenue, at New Delhi in November, 1937, will shortly be published for general information.

Copies, price 12 annas or 1s. 3d. each, will be available with the Manager of Publications, Delhi, from July 18.

LAND OF DEVIL'S CAULDRONS

Where Women Charm With Their Necks

MEN ROW WITH THEIR LEGS

And

Bamboos Flower Once In Eighty Years

Devil's cauldrons where hilly torrents vanish, women, who, to add to their beauty, stretch their necks several inches, men who row with their legs, bamboos which flower once in eighty years—these were some of the unusual phenomena encountered by the Burma Party of the Survey of India, who have lately completed a survey of the south-eastern parts of the Shan States, Burma. Their report has just been published.

With an average height over large areas of well over 4,000 feet the Shan plateau is approachable from the West through dense forest, in which villages are few and far between; there are hardly any jungle paths.

The few inhabitants eke out a precarious existence from as *Taungya* cultivation, which consists of cutting down a patch of jungle, generally on a steep hill-side, burning it and planting the clearing with paddy. The yield is low and after one crop has been reaped, the clearing is abandoned. Whole jungles in the neighbourhood of the village are thus cut down in a few years and the village moves on to another area, where it starts anew on its work of destruction.

"German Spies At Work"

The abandoned *taungya* clearing has a dense growth of thicket known as *ponzo* consisting largely of high grass and shrubs. Impenetrable for human beings unless they cut every step of their way, in recent years it has become more difficult than ever owing to the rapid spread of a mauve-flowered creeper-like shrub known as *bizat*.

To many villagers in the locality it is known by the name of "German flower", as it made its first appearance during the War, since when it has been spreading at an alarming speed; the village wiseacres have little doubt that it was introduced by German agents to cause them trouble.

Surveyors on the march or going about their work had often to hack their way for miles through these *ponzo* thickets.

To add to their troubles *taungya* burning, which usually begins in March, started early when the survey operations were in progress as the jungle was drier than usual because of the early cessation of rains. The smoke from these burnings hung in a dense pall over the country-side often limiting visibility to a mile or so and greatly impeding the surveyors' work.

Once In Eighty Years

An unusual phenomenon met with during the operations was the flowering of the bamboo over extensive areas. This occurs only once

in about eighty years, with the species of bamboo prevalent in that area.

Large numbers of jungle fowls, presumably attracted by the bamboo seeds, added colour to the brilliant display.

Game of many kinds was encountered including tiger, sambur, gyi (barking deer), numerous pig and on one occasion a small herd of serow. Nearly all this wild life was to be seen, however, in Yamethin district and only once over the borders of the Shan States, where there are numerous guns and game laws are not enforced and nearly everything had been killed off.

The change in the character of the country is almost startling in its suddenness as one emerges eastwards on to the Shan plateau. The dense jungle is left behind and in their place are smooth hill sides covered with short grass or bare red earth, while jagged outcrops of naked rock break the surface of the ground in unexpected places, and here and there are patches of pine forest. The higher hills are rugged and covered with thorny scrub between the rocks and many of the valley bottoms are built up with neatly terraced fields.

When Axioms Are Not Axioms

Surveyors emerging into this country thought at first glance that their difficulties were over, but they were soon disillusioned as the plateau has topographical peculiarities, which must be unique.

A surveyor regards certain physical features as axiomatic: every valley, for example, must have an outlet; every hilly area a regular drainage system, in which tiny streams merge with larger ones till eventually they join a main river or peter out in the sands of the plains. His reliance on these essential features is of great assistance to him in working out the details of intricate ground.

In the Shan plateau, however, surveyors soon found that they had to revise their notions of the axiomatic. Many valleys had no outlets. Perfectly good streams ran straight against precipitous

hillsides and—disappeared. Looking down from a commanding hill top the surveyor was often confronted with a maze of hollows unconnected by any form of water course. These hollows varied from the size of a large shell hole, a few yards in diameter, to regular internal drainage systems covering many square miles. The smaller ones are just plain hollows: the larger ones culminate in some low point where water, when it flows, disappears, often in some gloomy cave under a threatening and overhanging cliff. To these spots the name "Devil's Cauldrons" has been given.

Even on the ridges amongst the hill tops Devil's Cauldrons crop up unexpectedly from nowhere, and the surveyors had laboriously to investigate every piece of country, taking nothing for granted. Progress was thus reduced to about half of what it ordinarily is, though but for the cauldrons this would have been an ideal country for topographical survey.

Ladies' Neck Wear

In the south-western corner of the plateau, there lived the Padaungs, a tribe akin to the Karens, whose claim to fame lies in their "giraffe-necked" women.

Malleable brass rods about half an inch in diameter are wound round and round the necks of the girls from the earliest childhood. The upper turn is forced up under the jaw and as the neck grows longer fresh turns are added at the bottom end. Many girls die of the gangreneous sores caused by chafing of the brass; but as a girl's beauty and value in marriage market depends on the length of her neck the Padaung women aim at longer and yet longer necks. A girl with over twenty rings round her neck is not uncommon. Similar brass rods are also twisted round the calves of the women's legs.

Prima Donna Gets Her First Laugh

The officer in charge of the survey party accompanied by his wife, camped at Hwariku, one of the principal Padaung villages. The village band consisting of drums, flutes and cymbals, trained by Italian missionaries to play western music—these people are largely Roman Catholic—turned out to greet them. Most of the players were small boys and their performance on their home-made instruments was extraordinarily impressive.

Accompanying them were a number of long necked women in ceremonial dress, with an elaborate coiffure decorated with silver rings and ornaments, which was strikingly handsome.

A white woman had never been seen before and when the band had gone through its somewhat limited repertoire,

the wife of the officer in charge of the Party played the gramophone to an admiring crowd of these long necked ladies. It was hard to say who was more astonished at the appearance of the other. The most successful record was one of Grand Opera sung by the Italian singer Amelita Galli Curci. They found the golden voice which has triumphed in every Western Capital extraordinarily funny and shrieked with laughter.

We Wash—They Polish

The Padaung woman does not wash her neck—she cannot get at it—but is careful to polish the brass round it and round her legs. In the late afternoon when the women came to draw water in long bamboo jars the banks of the village pond at Hwariku presented a remarkable sight. Women of all ages were standing and sitting around polishing their brass with water and wisps of dry grass.

But in spite of their long necks they carry heavy loads on their backs supported by a strap going over the forehead and appear to do most of the field work, besides carrying wood and water.

As the survey proceeded eastwards, the party came on the southern half of the Inle lake in the Shan State of Yawngnaw. Many villages here are built on posts standing in shallow water, and surveyors had to make frequent use of boats.

Varsity Coaches Please Note

Its leg rowers have made the Inle lake famous. The boats used are of the large dug out type with raised ends. On these ends the rowers stand, balanced precariously on one leg, facing the bow of the boat. The other leg is twisted round the oar the top end of which is held in one or both hands.

The rower makes his stroke by thrusting the oar vertically into the water beside the boat and pressing it back with his leg. At the finish of his stroke he brings the blade forward with a wide outward and forward sweep, an action which requires quite extraordinary feat of balancing.

Standing in the lake and near the main channel of the Bali Chaung, which flows out from its southern end, are numerous *hpongyi kyaungs* (Buddhist Monasteries). In the neighbourhood of these all life is sacred and immense flocks of wild duck rest on the water near them during the day. While here they seem to realise their immunity from danger and will allow boats to approach to within thirty or forty yards and then only move reluctantly away, the same duck when away from the sanctuary, going to or returning from their feeding grounds, will not allow a boat to approach anywhere near within gun shot range.

CHEAPER PAPER FOR INDIA

Surcharge Removed

INDIAN CONSUMER BENEFITS

Tariff Board's Interim Report Accepted

The Government of India, on the recommendations made by the Tariff Board in their report, dated March 30, 1938, in the interests of the Indian consumer, have removed the revenue surcharge of 25 per cent imposed during the financial crisis of 1931 on the protective duties on paper and paper (wood) pulp.

The Commerce Department referred to the Tariff Board the question whether the protective measures for the paper industry should continue after March 31, 1939. It also asked the Board to submit, if the Board thought proper, an interim report as to whether the revenue surcharge of 25 per cent imposed in 1931 should also be continued. This interim report has just been published. A Government Resolution and Notification removing the surcharge on imported wood pulp was also published in the Gazette of India of June 25.

It will be recalled that a specific protective duty of 1 anna per lb. was imposed on paper in 1925 on the recommendation of the Tariff Board. Again in 1931, imported pulp was subjected to a duty of Rs. 45 per ton. The Government of India adopted these recommendations in the Bamboo Paper Industry Protection Act of 1932.

In view of the depression of 1930-31, the Indian Finance Act of September 1931 imposed a further surcharge of 25 per cent on this protective duty. This had the effect of raising the duty of 1 anna to 1 anna 3 pies per lb. and the alternative *ad valorem* duty of 15 per cent to 18½ per cent. The duty on wood pulp was also increased thereby from Rs. 45 to Rs. 56-4-0 per ton.

It was found in 1931 that the principal paper companies, between 1925 and 1931, averaged Rs. 105.35, Rs. 76.62 and Rs. 127.05 as the margin of overheads and profit over the actual costs of production, due to the cumulative effect of protection and surcharge. Some companies were paying regular dividends and had accumulated reserves, others earned small profits and made provisions for depreciation. There was a general improvement in the financial position of the companies as a whole.

From an examination of the companies' figures, it would appear that the revenue surcharge seemed necessary till 1936-37 to yield this profit. From December 1936, however, there has been a substantial rise in the price of wood pulp and a consequent rise in the price of imported paper, which has enabled the Indian companies to raise their selling limits. From all accounts it appears that there is not much likelihood of a fall in the price of European paper,

as the declared policy of the manufacturing companies is to maintain it at an agreed level.

As the selling price of imported paper is the deciding factor, some of the Indian companies, manufacturing paper from bamboo and grass pulp, agree that, having regard to the present price level of imported paper, the continuance of the revenue surcharge, as a measure of protection, is not necessary. The companies have effected a substantial reduction in their works, increased their production and reduced the incidence of overhead charges.

As for the new or reconstructed mills, they have profited by the experience of the older ones and can therefore instal the latest type of plant. Over-protection would enable manufacturers to maintain prices at a level unfair to the consumer.

The main idea of the imposition of the duty on imported pulp was to encourage the use of indigenous raw material such as bamboo and grass. A reduction of the duty on imported pulp would certainly make it more advantageous for both the established and new mills to the extent to which they use imported pulp. The cost of manufacture of indigenous wood pulp has been considerably reduced since 1931.

The three principal Indian paper manufacturing companies, representing 85 per cent of the total production in 1936-37, use bamboo and grass pulp. The removal of the surcharge would only take off Rs. 11-4-0 per ton, still leaving the protective duty of Rs. 45 per ton. This is hardly likely to have any adverse effect on the consumption of bamboo or grass pulp, considering the recent rise in the world price of wood pulp and the reduction in the cost of manufacture of the indigenous pulp.

BUILDING (SAFELY) ON SAND

Irrigation Researches Show The Way

A SCIENTIFIC ROMANCE

Results of investigations in the Punjab Irrigation Department, spread over a period of nine years, providing a complete solution to the problem of hydraulic pressures below works on permeable foundations, are given in a scientific publication, of great interest to those interested in the problem, entitled "Design Of Weirs On Permeable Foundations", just issued by the Central Board of Irrigation.

Based on data from prototypes in the field and models in the laboratory and supported by mathematical theory, details are given in the publication of a number of designs for which it is claimed that they can be worked out in the field without much reference to outside literature.

A historical sketch has been given from its inception of the development of the science of subsoil hydraulics as related to the design of weirs on permeable foundations—one of the first subjects taken up for enquiry by the Central Board of Irrigation nearly eight years ago.

The flow of water through the subsoil below weirs with its attendant hydraulic gradients and uplift pressures, has been recognised as a determining factor in design ever since 1895, when Col. Clibborn carried out his classic experiments on the flow of water under head through Khanki sand at Roorkee. Not till lately was it thought that the subject was of great complexity and called for intensive investigations.

After some considerable discussion, the Central Board of Irrigation adopted in 1933 the following resolution:—

- (a) that further intensive study of sub-soil flow beneath actual works was essential,
- (b) that in view of the active part already taken by Mr. A. N. Khosla of the Punjab Irrigation Department, the compilation of a comprehensive note on the subject should be entrusted to him,
- (c) that Mr. Khosla should be supplied with all available observations on the subject from India,
- (d) that in order to secure uniformity of observations he should prepare a note on the nature of observations required and the form in which they should be tabulated, this note to be communicated to all interested through the Board.

A note on the Observations and Record of Pressures below Works On Permeable

Foundations was accordingly presented to the Board and published by it in December 1934. The object of the publication was, primarily, to set forth the factors involved in the design of hydraulic works on permeable foundations, the up-to-date knowledge on the subject and the information further required for the solution of the problem. The publication also described the methods by which further information could be acquired, and recommended the introduction of observation pressure pipes on all new works of that type. It was widely distributed and recipients were asked to provide the Board with any information useful to further study of the problem.

Little information was received, however, chiefly because few works of this nature have recently been constructed and provided with the necessary observation pipes. Fortunately, exhaustive investigations were continued in the Punjab and it has now been possible to bring out the present publication by Rai Bahadur A. N. Khosla, Dr. N. K. Bose and Dr. E. McKenzie Taylor, which incorporates the essence of field research in the Punjab since 1927 and of laboratory research carried out at the Punjab Irrigation Research Institute since 1932.

Amongst other things a solution is offered in the publication to the problem of sub-soil flow underneath a structure and the prevention of "piping" which is usually attained by lines of sheet piling. In addition detailed instructions have been given for design in respect of the disposal of floods over a structure, including calculations for the length of the structure, position of the standing wave and dimensions and nature of the downstream protection to be provided. Detailed instructions have also been given as to the maintenance of weirs and barrages in rivers with permeable and erodible beds.

FROM 10,500,000 TO 31,000,000 ACRES

India's Irrigation Triumphs

OVER RS. 100 CRORES IN CROP YIELD

Triennial Review

With a steady increase in yield and area, crops worth well over Rs. 100 crores were raised from areas receiving State irrigation alone during the year 1935-36.

From about 10,500,000 acres in 1878-79, the area annually irrigated by State works alone has now risen to about 31,000,000 acres—nearly one-eighth of the total cultivated area in British India.

The total capital outlay, direct or indirect, on irrigation and navigation works amounted, at the end of 1935-36, to over Rs. 153 crores, the gross revenue for the year to about Rs. 14 crores and the working expenses to about Rs. 5 crores, thus yielding a net return on capital of about 5.7 per cent—quite a satisfactory figure.

These are some of the remarkable facts to which attention is drawn in the Triennial Review of Irrigation in India 1933-36, just published.

There are about 300 irrigation schemes in operation in British India alone, of which 70 are major works. Of the 300, a third are classified as productive and the rest as unproductive, i.e., as works constructed primarily with a view to the protection of tracts with precarious rainfall and to guard against the necessity for periodical expenditure on relief in times of famine.

Punjab Leads

Of the provinces in India with extensive irrigation works, the Punjab is easily the first with an irrigated area of over 11,000,000 acres, Madras comes second with nearly 7,500,000 acres, followed by Sind and the United Provinces with over 4,000,000 acres each. The next is Bihar and Orissa with over 900,000 acres.

In the percentage of area irrigated to the total area sown, Sind leads with nearly 90 per cent, followed by the Punjab with 35 per cent, Madras with 21 per cent and the North-West Frontier Province with 20 per cent. Bengal is the only province where the area irrigated is less than 1 per cent of the total area sown.

The total average area irrigated in British India during the triennium was nearly 31,000,000 acres, as against 30,000,000 acres in the previous triennium; Sind and Bengal contributed largely to the increase due respectively to the functioning of the Lloyd Barrage canals since 1932-33 and the extension of irrigation in the area commanded by the Damodar Canal. There has been an increase also in the United Provinces attributable mainly to the construction of the State tube-wells and the development of the sugar industry. The only decrease of any importance in the area irrigated was in the Central Provinces, where it was due to the weather and to the economic situation.

As in previous years, during 1935-36 also the Punjab showed the largest return on capital invested in productive works, namely, 14.2 per

cent, followed by the North-West Frontier Province with 8.4 per cent, Madras with 7.4 per cent, Bihar and Orissa 6.7 per cent, and the United Provinces with 6.3 per cent.

Largest In The World?

Of the irrigation works of any importance completed during the triennium, by far the largest is the Lloyd (Sukkur) Barrage and Canals Construction Scheme. With its 6,600 miles of channels and 48,000 miles of water-courses capable of drawing 46,000 cubic feet of water a second from the river, it is by far the largest canal system in India—possibly in the world. Its largest canal is the broadest ever excavated and exceeds the Panama Canal in width at bed level.

The scheme commands a gross area of 7,500,000 acres—an area roughly equivalent to a quarter of England and more than the entire area irrigated in Japan. About 6,250,000 acres, or as much as is actually irrigated in Egypt, are cultivable; and it is estimated that about 5,500,000 acres, or an area about the size of Wales, will actually be irrigated annually when the project has been fully developed.

With the completion of the system of canals, its cost totalled over Rs. 20 crores, and it is expected to yield a net return of 7.39 per cent ten years after completion in 1942-43.

The Irrigation Colossus

The other great engineering work, completed during the period under review, is the Cauvery Mettur Project. Framed with two objects, first, to improve the existing fluctuating water supplies for the Cauvery delta area of over a million acres, and, secondly, to extend irrigation to a new area of over 300,000 acres, the project involved the construction of a large dam on the Cauvery at Mettur and of an irrigation canal (the Grand Anicut canal) taking off on

Province.	Area Irrigated in 1935-36.	Average area irrigated in the triennium 1933-36.	Area sown.	Area irrigated by Govern- ment irrigation works.	Percentage of area irrigated to total area sown.	Capital cost of Govern- ment irrigation and naviga- tion works to end of 1935-36.	Estimated value of crops raised in 1935-36 on areas receiv- ing State irrigation.
	Acres	Acres	Acres	Acres	Per cent	(In lakhs of rupees) 2,054	(In lakhs of rupees) 2,232
Madras	7,552,515	7,448,147	36,628,827	7,552,515	20.60	1,072	192
Bombay Deccan	372,559	382,800	26,375,991	372,559	1.41	3,084	776
Sind	4,316,052	4,225,031	4,808,308	4,316,052	89.76	537	94
Bengal	205,521	127,808	27,695,300	205,521	0.74	2,712	2,210
United Provinces	4,319,127	3,977,404	35,278,077	4,319,137	12.2	3,469	3,900
Punjab	11,195,537	11,007,776	31,850,814	11,195,537	35.15	696	6
Burma	2,153,167	2,105,384	18,210,000	2,153,000	11.8	628	368
Bihar and Orissa	940,248	887,408	28,075,500	940,248	3.3	679	96
Central Provinces (excluding Berar)	322,799	332,500	20,352,815	323,000	1.5	315	150
North-West Frontier Province	430,906	431,135	2,242,811	431,000	19.22	36	5
Rajputana	23,950	26,646	436,598	23,950	5.48	36	3
Baluchistan	20,858	20,760	421,246	20,858	4.95		
Total	31,853,239	30,972,799	232,376,287	31,853,377	13.7	15,318	10,032

the right bank of the Cauvery, and the improvement and extension of the existing Vadar canal.

Easily first in the British Empire, the dam at Mettur is over a mile long and impounds a 60 square-mile lake with a shoreline of 180 miles and a maximum effective capacity of about 94,000 million cubic feet of water.

Estimated to cost about Rs. 662 lakhs for all works, including hundreds of miles of canals and distributaries, the project is expected to yield a net revenue of over Rs. 50 lakhs.

Details are also given in the Review of the other important schemes, including irrigation projects, navigation channels and embankment works, now under consideration in the different provinces.

The Haveli Project

Among these is the Haveli Project now under construction in the Punjab. Estimated to cost about Rs. 535 lakhs, the project is expected to yield a net revenue of over Rs. 43 lakhs, or a return of about 8 per cent on the expenditure involved.

The primary object of its construction is to irrigate the land lying along the banks of the Chenab, below the junction of the Chenab and Jhelum, and to improve the water supply of the Sidhani Canal and of the Chenab inundation canals in the Multan and Muzaffargarh districts. The project consists of three distinct but inseparable parts, namely, the construction of a barrage below the junction of the Chenab and the Jhelum, the construction of a link between the Lower Bari Doab Canal near Montgomery and the Pakpattan perennial canal, and the provision of a winter water supply to the Burala Branch Extension of the Lower Chenab Canal.

It is estimated that the project will provide a probable perennial irrigation for over 555,000 acres and a probable non-perennial irrigation for over 450,000 acres in the Haveli Canals tract and will, in addition, irrigate 128,000 acres on the Montgomery Pakpattan link and over 38,000 acres on the Burala Branch Extension.

In Madras a large project for impounding the waters of the Tungabhadra river has been under consideration for a long time. Technical and financial difficulties and the problem of reconciling rival claims to share in the waters of the river have stood in the way. The general question of the allocation of the waters of the Tungabhadra is now under examination by the Governments concerned.

Another large project under consideration is the Lower Bhawani Project. Drill borings along the line of the proposed dam were completed, and experiments on the duty of water for dry crops irrigated by flow were conducted in certain areas under the project conditions. Observations were also made on transmission losses in certain channels.

Madras Goes Ahead

The Government of Madras have undertaken to spend Rs. 50 lakhs spread over three years on a widespread scheme of improvements to their minor irrigation works, as a measure of economic relief and to reduce rural unemployment in Madras; general progress has been good.

In Bengal, the work on the detailed survey and investigation of the Darakeswar Reservoir Project, which is intended to irrigate 180,000 acres, was in progress during the period under review. Discharge observations have been made during the monsoon seasons to ascertain the supply available in the river.

A contour survey of a far-reaching importance in parts of Central and Western Bengal was begun in February, 1936, in order to determine the possibilities of extending irrigation and improving the drainage and sanitary conditions of the tracts by large schemes, such as the More Reservoir Scheme, the Darakeswar Reservoir Scheme, and thereby to develop the whole area.

In the lower Kumar river, a navigation channel of considerable importance, locks and sluices have been put in order to control silting in the river, at a cost of about Rs. 7½ lakhs. The locks and sluices can be so operated as to control the flow in the Lower Kumar river, but silting troubles, though reduced, still continue and a final solution has yet to be found.

Owing to financial stringency the dredging programme in the Lower Kumar river was restricted. As a result the river was navigable to large steamers from May to November each year, and to shallow drafted steamers and boats during the remaining months.

Bengal Navigation Channel

Another navigation channel of considerable importance in the Bengal province is the Attabanka river, which forms a cross country connection between the Rupsa and the Madhumati rivers. Unusually tortuous from its junction with the Bhairab river near Alaipur to the river Madhumati at Asthail, it is becoming badly shoaled. The depth of the river is so reduced in winter that the shoals are not navigable without extensive dredging. During 1934-35 and 1935-36 the condition of certain shoals became so bad that steamer traffic through this river had to be diverted along the Madhumati river and the Attya Halifax Cut Route. In this diversion route, too, the Mangalpore and the Haridaspur shoals in the Madhumati river had to be dredged in 1934 and 1935.

The policy of gradually abandoning certain protective embankments, which have been found to be of harmful effect because of the obstruction caused to the river spill, was continued in Bengal.

In the United Provinces, the proposals for the Nindeh reservoir for the extension of irrigation on the Garai canal system in the Mirzapur district are being reviewed with a view to utilizing the scheme for development of electric power.

Power From Water

Investigations were also made for extending urban electricity and for extending irrigation by means of electrically driven tube-wells, and canals fed by water pumped by electric power from rivers, into certain tracts of eastern Oudh not commanded by the Sarda Canal. Plans for three canals taking off from the Gogra, Kalyani and Gumti rivers were proposed. As a preliminary step, a small scheme has been sanctioned for pumping 160 cusecs from Gogra River and the erection of a power house at Sohawal Railway Station to supply energy for working the pumps and electrifying Fyzabad town. The canal is designed to irrigate over 43,000 acres annually. The expansion of similar power irrigation in Eastern Oudh will depend on the results of this experiment.

An important work in progress in Baluchistan was the Quetta storm water drainage and embankment project at an estimated cost of Rs. 2 lakhs. The project is designed to protect Quetta from the periodical damage caused by flood water. The existing drainage channels passing through the town are being improved so as to increase their discharging capacity and the vents of the bridges are being widened with a view to facilitating the passage of flood water through the town without causing any damage. The expenditure on the project up to the end of the year 1935-36 was about Rs. 2 lakhs.

Bombay Projects

The irrigation projects in Bombay now under consideration are the Kelegaon Tank project and the Waldevi Tank project. The first is intended to supplement the storage in the Ekruk Tank at Sholapur, with a view to meeting fully the irrigation requirements of the tract under command and also the non-agricultural needs of Sholapur town with its cotton mills. The object of the Waldevi Tank project is to provide Nasik town, Deolali Cantonment, the Great Indian Peninsula Railway and the Government Central Jail, with an adequate supply of water.

In the North-West Frontier Province, projects for Lift Irrigation of the area near Risalpur, and for the control of the Tank Zam and the Gumal river, are being considered.

ALL INDIA CATTLE SHOW

GOVERNMENT GRANT FOR CONTINUANCE

In order to maintain the interest created by the last All-India Cattle Show in the improvement of cattle, the Government of India have sanctioned a grant for the continuance of the Show.

It is proposed to hold the next Show in New Delhi from February 13-18, 1939; the prospectus will be published shortly.

The active interest of Provinces and States contributed to a large extent to the success of the last Show, and with the experience gained

it is anticipated that the response next year will be still greater.

Importance to Breeders

The first All-India Cattle Show was held in February last in New Delhi under the patronage of His Excellency the Viceroy. Of great economic importance to breeders of pedigree stock in India, the show was instrumental in demonstrating the valuable material already available in this country for livestock improvement work and also the potentialities of many Indian breeds of cattle, both for milk and work.

It also helped in bringing together breeders from different parts of the country, thereby facilitating an exchange of ideas and fostering a healthy spirit of competition, which is essential for further improvement. High prices were realised for animals sold at the Show.

THE WARDHA SCHEME

MISCONCEPTIONS REMOVED

The Wardha Scheme of Education was considered in the light of the Wood-Abbot Report and other documents at the meeting of the Sub-Committee appointed by the Central Advisory Board of Education held from June 27-30, 1938, under the chairmanship of the Honourable Mr. B. G. Kher, Prime Minister, Bombay, and unanimous conclusions are understood to have been reached on most points.

As many of the criticisms against the scheme arise out of misconceptions or misunderstandings, an explanation was given to the Sub-Committee of what the scheme was and what it was not.

The Wardha Scheme does not lay down that the schools should be self-supporting; neither does it imply that education is subordinated to production, though the scheme emphasised education through manual activities.

One criticism against the scheme is that it is essentially secular and does not take into consideration religious education. This again is a misconception; nowhere did the scheme as formulated in the Zakir Hussain Report lay down that religious education should be neglected. No change in the present system by which religious education could be given by any community in the schools outside school hours was implied.

It was also made clear that the Wardha Scheme did not guarantee employment by Government of the pupils who left school at the end of the seven years' course. It is not vocational and is not primarily concerned with unemployment. Its main value lies in the new reorientation it gives to education by emphasising the necessity of education through manual activities.

Various details of Dr. Zakir Hussain's report, which should be regarded as an authoritative exposition of the scheme, were discussed.

TOWARDS BETTER PUBLIC HEALTH

Fighting India's Diseases

INDIAN RESEARCH FUND ASSOCIATION'S WORK

Malaria : Leprosy : Plague : Tuberculosis : Cancer

That as a result of the researches carried out under the auspices of the Indian Research Fund Association, it is now possible to fight with greater knowledge, and therefore with greater success, many of those diseases which in India inflict widespread sufferings and incapacitation and take a large toll in human lives every year, is revealed in the Annual Report of the Scientific Advisory Board of the Association for 1937, just published.

One such disease is malaria, which has long been studied at the Malaria Institute of India at Kasauli. An important addition to the anti-malaria activity of the Association during the year was the conduct and supervision of the intensive campaign undertaken to rid Delhi city of malaria. As a result of the work done, a measure of control was secured over mosquito breeding—a notable example of what can be achieved by the whole-hearted co-operation of the administrative authorities and public health and engineering services.

A large scale experiment was also undertaken in two villages in the Delhi area in order to determine the value of insecticidal sprays.

Mosquito's Life-history

Special investigations were also carried out in Kutch and in Delhi into the life-history and habits of certain types of malaria-carrying mosquitoes.

Bulletins were issued on malarial problems, embodying the results of investigations, for the information of health authorities and the general public, and training was given to a number of medical officers in the latest methods of malaria control.

Another serious disease which has been investigated is black-water fever, notorious in regions with a high prevalence of malaria. Researches are being continued on this disease at the All-India Institute of Hygiene and Public Health, Calcutta. Laboratory studies have been made of the mechanism of the production of this disease and the methods of treatment. An epidemiological study is now in progress in the Dooars of Bengal, which are endemic areas for this disease.

Studies in Leprosy

At the Calcutta School of Tropical Medicine, where leprosy research has been in progress for several years past, the search for its cure continues.

A fact which has long baffled explanation is the tendency which leprosy shows to relapse even after the disease has been arrested in the skin. Studies at Calcutta have now revealed that the infection goes down in many cases to the bone marrow and that this is probably the reason why the relapse takes place.

Racial variations in leprosy in India are being studied, as it has been found that the

Chinese in Malaya experience a severer form of the disease than is common in India. But in India, also, there are variations in the manifestations of the disease in different parts of the country, though the difference has not been found to be so marked as in Malaya.

Has diet any effect on leprosy? An interesting study of the subject with possibilities of a far-reaching character, is now being made at the Lady Willingdon Leper Settlement in Chingleput, Madras Presidency. Some preliminary work in the institution appeared to show that those who received skimmed milk as a supplement to their diet, improved to a greater extent, in the case of skin leprosy, than those who did not, but the experiment has not yet reached a stage where a report on results is possible.

At the request of the International Public Health Office in Paris, an intensive study has for the last four years been made of cholera at the different research laboratories in India. The interim reports submitted to the International Office have evoked warm appreciation and at its May meeting in 1937, the Cholera Commission of the Office noted that these researches have thrown considerable light on the epidemiology of cholera, the significance of healthy carriers of cholera germs and the preparation of a specific standard agglutinating serum for the diagnosis of the disease.

Cure For Plague?

Encouraging results are reported to have been obtained from plague investigations. Plague research is mainly carried on at the Haffkine Institute, Bombay, while field studies regarding the cause and spread of epidemics have been in progress at an endemic centre, Cumbum Valley, in the Madras Presidency. Investigations in Bombay have been directed mainly towards the preparation of a protective vaccine of maximum efficiency, and of a curative serum for the disease and towards the elucidation of the factors responsible for outbreaks of plague. Good progress has been made in the preparation of the vaccine and serum, though the problem of plague incidence still eludes a complete explanation.

That, in nature, only a small proportion of the rat fleas carrying the plague germ are actually able to transmit infection, but

that the bite of one such flea is sufficient to cause the disease, has been demonstrated by experiments in the Cumbum Valley.

It has now also been demonstrated in field experiments that if the rat population of a locality is to be kept down to a steady low level, fumigation of rat-burrows with cyanogas for the destruction of rats should be carried out at intervals of not more than three months, and that this should be continued from three to five years. Experiments were also carried out to determine the amount of calcium cyanide that should be used and the period of exposure necessary for the effective disinsection of various commodities, such as rice, paddy, cotton, wheat flour, etc., and interesting results were obtained.

Tracking Down Tuberculosis

An investigation of considerable importance was begun during the year in a large jute mill about 22 miles from Calcutta, which employs over 10,000 workers from almost all the provinces of India, in order to find out the nature and extent of tuberculosis infection among the workers, and to trace as many of those diseased as possible to their homes, so as to estimate the extent of home infection and the means whereby the scourge spreads. One of the principal ways of tuberculosis dissemination is through the industrial population. Factory labour in India is largely drawn from rural areas, which are relatively less infected and hence the migrating labourer is highly susceptible to tuberculosis.

In the urban industrial centres the incidence is definitely higher, and the unhealthy conditions of life of so many factory workers render infection easy. As they generally maintain contact with their village homes, the constant outward and inward flow of factory labour is held to be a serious cause of the spread of tuberculosis. The investigation is as yet in its preliminary stage, but its results are awaited with interest.

Another subject of study has been filariasis, which ranks high among the diseases responsible for much suffering. In the affected areas, which are, broadly speaking, along the coastal tracts and in the flat basins of large rivers, the infection may sometimes be present in as high a proportion of the population as 25 to 30 per cent. Researches conducted at the Calcutta School of Tropical Medicine and in other parts of India have yielded much useful knowledge, but the search for an effective drug against the disease has not so far been successful.

Towards A Happier Life

To the relatively new science of nutrition, the Indian Research Fund Association has for a number of years past been giving considerable attention in its Nutrition Research Laboratories at Coonoor as improvement in nutrition is essential not merely for prevention of disease but also for a fuller and happier life for the individual. Field surveys have been undertaken in different parts of the country to ascertain the state of the people's nutri-

tion, the nutritive value of foodstuffs available in India has been closely studied; much useful knowledge obtained, medical officers have been trained in nutrition in order that more workers may be available for surveys and, to educate the people in modern dietetic principles, a special Liaison Officer has been appointed in order to co-ordinate agricultural research with the requirements of human nutrition.

That skimmed milk, which is comparatively much cheaper than whole milk, has a high nutritive value, as it retains all the protein and most of the mineral salts, is one of the interesting discoveries made. It has also been found that a large part of the benefit derived from skimmed milk is due to the calcium it contains. Children, who were given calcium lactate daily for three or four months, put on more weight than those who received none. Thus it has been demonstrated that calcium salt, while not equal to skimmed milk in value, is a partial substitute for milk.

An inquiry conducted in Calcutta into the causes of maternal mortality, was completed during the year and another is in progress in Bombay. It is also proposed to make use of health units situated in different parts of the country for the collection of data.

Maternity, which should be normally a physiological function for the woman attended with little risk to her health or life, claims in India a heavy toll of lives. The maternal mortality rate per 1,000 live births in India has been estimated to be about 20 in comparison with 3.8 in England and Wales in 1936, a large number of these deaths are preventable. The enquiry at Calcutta has revealed that anæmia, associated with pregnancy and eclampsia, are two of the main causes of maternal mortality, and special investigations have now been opened concerning them.

Pán And Cancer

Another useful investigation was that conducted into the incidence of cancer in India during the past four years. An examination of hospital statistics, particularly of the larger hospitals attached to teaching medical institutions, where a comparatively high stage of diagnostic skill may be expected, brought out interesting facts.

The age of maximum incidence of cancer in India is at least ten years lower than in Western countries and in Japan. In every province, the incidence of cancer of the cervix is heaviest amongst Hindu women. Cancer of the mouth is more common among males than among females and among Mohammedans than among Hindus.

This type of cancer has its smallest incidence in the Punjab, where the habit of chewing *pán* is not prevalent to the same extent as in other parts of India. From the Punjab, cancer of the mouth increases eastwards towards Bengal and southwards towards Madras, and the practice of *pán* chewing also appears to show a corresponding increase.

BETTER RETURN FOR COTTON GROWERS

The Future of Cotton Marketing

INDIAN CENTRAL COTTON COMMITTEE MEETS IN BOMBAY

Matters of importance for the future of cotton marketing were deliberated on July 12-13 in Bombay at a meeting of the Indian Central Cotton Committee which marked a new stage in the efforts begun in 1923, of the Indian Central Cotton Committee, to improve Indian cotton marketing.

The question of the improvement of cotton marketing, both with reference to the primary markets for the sale of unginned cotton (*kapas*) and the organization of the wholesale market, was dealt with in considerable detail by the original Indian Cotton Committee of which Sir James Mackenna (then Mr. Mackenna) was President and Sir Frank Noyce (then Mr. Noyce) was Secretary, drew attention to a number of matters of which the two most important were the need for regulated cotton markets at up-country centres, to which the cultivator would have access, and the better organization of the wholesale and futures market in Bombay.

The Indian Central Cotton Committee was set up in 1921 and funds from the Cotton cess provided in 1923. Cotton marketing received immediate attention. A study of the problems of primary cotton marketing was commenced and in consultation with the Bombay Cotton Contracts Board and subsequently the East India Cotton Association, which was set up shortly after, the Committee was able to secure a number of improvements in the conditions of cotton trading which have been of undoubted benefit both to the trade and the cultivator. Close co-operation between the Committee and the Association continues as also with the Karachi Cotton Association which came into being in 1932, and which was the successor of the Karachi Joint Cotton Committee, the establishment of which in 1927 was largely due to the initiative of the Indian Central Cotton Committee.

I. C. C. C. Lead Followed

In 1924 the Indian Central Cotton Committee initiated the first series of surveys on the marketing of *kapas* with special reference to the recommendation of the Mackenna Committee that regulated markets of the Berar type should be set up in other parts of India. The results of surveys, carried out in the Central Provinces, Berar, Khandesh, Gujarat and Madras, so clearly showed the need for such regulated markets that the Government of Bombay proceeded with a Bill on the lines suggested by the Committee and several regulated markets have been established. Action was subsequently taken on similar lines by the Governments of the Central Provinces and Madras and by the Hyderabad and Indore States.

When the Agricultural Marketing Adviser to the Government of India was appointed in 1934, the Government of India provided funds for a central marketing staff and provided a further sum of ten lakhs from which the Imperial Council of Agricultural Research made grants to

all Provinces on a five-year basis to meet the cost of a specified number of assistant marketing officers in those Provinces.

A comprehensive scheme of agricultural marketing surveys was then approved. It was decided that for the time being several commodities should be omitted from the general scheme, notably cotton, jute and sugar. A jute marketing survey, planned by the Agricultural Marketing Adviser, has since been undertaken by the Indian Central Jute Committee and is being carried out by a special staff under Mr. Livingstone's guidance.

On the recommendation of the Sugar Committee of the Imperial Council of Agricultural Research a sugar and sugarcane marketing survey is now in progress.

Since cotton marketing in India is more highly organised than that of any other agricultural commodity and since the Indian Central Cotton Committee was devoting constant attention to this problem it was decided to leave the matter to the Committee.

The Position Today

In August, 1937, the Central Cotton Committee took up the question as to whether a comprehensive cotton marketing survey should be undertaken at the cost of the Committee. The Agricultural Marketing Adviser to the Government of India was invited to prepare a scheme, this was done and the matter further considered by the Central Cotton Committee in January, 1938. It was then decided that before undertaking a scheme of this magnitude the opinions of commercial bodies should be invited. These were received and were considered at the meeting of the Committee on July 12-13.

The Indian Central Committee have also provided funds for a marketing survey with the limited objective of establishing regulated markets for cotton in the Punjab. The marketing surveys on other commodities carried out

(Please Turn to Page 24, Column 2.)

PUNJAB MAIL DISASTER

“Sabotage By Deliberate Removal of Rail”

DETAILED DESCRIPTION OF THE ACCIDENT

Senior Government Inspector of Railways Reports

Sabotage by the deliberate removal of a rail and other interferences with the track has been established, according to the final report on the accident to the Punjab Mail, near Muthroopore, East Indian Railway on June 7, by the Senior Government Inspector of Railways, dated June 21, submitted to the Railway Board.

The full text of the final report describes the accident as follows :—

At about 23-23 hours on June 7, 1938, 5 Up Punjab Mail derailed at mile 191|13 between Muthroopore and Sankarpur Block Huts. The engine derailed to the left of the line and plunged down the bank which is 20 to 25 feet in height, followed by the five leading bogies comprising brake van, Inter class bogie, postal van, upper class coach and dining car in the order named. The sixth coach was derailed of all except the rear pair of wheels while the remaining two coaches remained on the track.

The engine came to rest in an upright position at the bottom of the bank the tender being thrown over on its right side. The four leading bogies were capsized to the left, the brake van which was fortunately empty, and the postal van being badly smashed. The dining car was canted at a considerable angle down the bank but not capsized. The Inter class coach overlapped the leading brake van but there was no telescoping.

Relief Rushed To Scene

A relief train with Assistant Engineer and Sub-Assistant Surgeon left Madhupur at 1-45 hours and arrived at the site of accident at 2-15 hours. The Chief Medical Officer and the District Medical Officer arrived by another relief train from Asansol at about 3-55 A.M. A Military doctor who was on the train assisted in giving first aid and eight British soldiers of the K. O. Y. L. I. rendered valuable assistance in extricating passengers from the capsized vehicles and assisting the injured.

The driver and one Railway Mail Service sorter were killed and 39 injured of whom 13 were Postal staff. Of the 39 only 3 were severely injured the remaining injuries being described as simple.

I arrived at the site at about 8-15 A.M. on June 8, 1938 with the Chief Engineer.

At the site of the derailment the line is double, the up track consisting of 36 feet 90 lb. flat footed rail on wooden sleepers N + 2 with rail screws. The track is level with a left hand curve of 10,000 feet radius and on a bank 16 to 25 feet in height approaching a girder bridge of 1 span 60 feet and 1 of 40 feet. Except for the section distorted by the derailment the track was found to be in good order in all respects.

Cause Of Disaster

As regards the actual cause of the disaster the statements recorded at my enquiry are of importance only in so far

as they establish the fact that no material evidence at the site of the derailment was removed or disturbed, prior to my arrival and that of Senior Railway and Police officials.

The description of the track at the point of derailment given by the Guard of the train, another Guard who was travelling spare on the train, and a Sub-Inspector of police who was also on the train, as seen by them immediately after the accident, besides the description given by the Assistant Engineer and Permanent Way Inspector who arrived about two hours later agree exactly with what I found on my arrival at about 8-15 hours on the morning after the accident.

As only one rail on the left of the track was concerned in the derailment, the distortion and dislocation of the track beyond this point being subsequent to, and consequent on, the initial derailment, I will confine my remarks to three rail lengths, i.e., Rail No. 1, that immediately behind the displaced rail, Rail No. 2, the displaced rail, and Rail No. 3, the rail immediately ahead of the displaced rail.

Rail No. 1 was exactly in its normal position in the track and up to the end of this rail there was no distortion. The fish plates at the forward end of this rail were removed and a pair of fish plates, presumably the same pair, were placed at right angles to and leaning against the end of this rail. A photograph taken by Mr. Stavridi, Senior Superintendent, Way and Works, Asansol, shows the position clearly.

Rail No. 2 was on its side with the rear end about 3½ feet outside its normal position in the track, the forward end being close up to the track. This rail was slightly bent and marks on the table of the rail indicate that at the time of derailment it was upright and close to the track and that the marks were caused by spring hanger bolts or other overhanging parts of the derailed vehicles. Near the forward end of this rail a second pair of undamaged fish

plates was found. The rear end of Rail No. 3 had been struck with great violence, probably by the leading wheel of the engine, and the mark of the impact is clearly visible on the end of the rail. This rail was torn from its fastenings, twisted and broken into two pieces approximately 11 feet and 25 feet in length. The shorter or rear portion was carried forward about 100 feet and thrown to the right of the track and the longer portion was thrown down the bank to the left nearly opposite its normal position.

The first mark of derailment on the sleepers was on the first sleeper ahead of rail No. 1. This mark was vertically below the position in which the wheel flanges would have been had the track been intact and indicate that the wheels dropped straight off the end of rail No. 1 without being deflected.

All the rail screws 30 in number, holding rail No. 2 to the sleepers were removed. Twenty-three of these screws besides 6 undamaged fish bolts were subsequently found on the bank to the left of the track.

There can be no doubt that the derailment was caused by the wilful removal of a rail from the left side of the track. This conclusion is agreed to by the Deputy Inspector-General of Police, C. I. D., Bihar.

An examination of the Guard's journal and station records indicate that the speed of the train was normal and the Guard's estimate of 40 miles per hour at the time of derailment may be accepted.

The last train over the section was 225 Up goods train about 50 minutes ahead of 5 Up. The driver of this train saw nothing unusual but the fireman stated that he saw two men with lamps on the line near the site of the derailment. He did not mention the fact as it was nothing unusual to see men on the line.

The evidence of the two firemen of 5 Up could not be taken at the time of enquiry as they were under medical treatment. As the cause of the derailment is fully established it is not essential to this report.

* * * * *

This report was drawn up in accordance with para. 8 of the Railway Board's Notification No. 1926-T. of March 19, 1930, and with reference to the Senior Government Inspector's preliminary report No. 1131/XIII/38, dated June 10, 1938. The following officers were present at the Senior Government Inspector's enquiry :—

C. F. Gilbert, Divisional Superintendent, Asansol ; Mr. Jones, Superintendent, Watch and Ward, Calcutta ; W. F. B. Higman, Superintendent, Transportation, Asansol ; A. G. Stavridi, Senior Superintendent, Way and Works, Asansol ; J. H. Taylor, Superintendent, Way and Works (M. L.), Asansol ; W. W. Whitney, Superintendent, Power, Asansol ; S. M. Rezavi, I.P., Government Railway Police, Patna ; M. K. Sinha, I.P., Crime Assistant to D. I. G. (C. I. D.), Rai Sahib Bansi Dhar Prosad, S. D. O., Deoghar ; M. S. A. Haque, Circle Inspector, Government Railway Police, Jamalpur ; N. J. Osmond, Sub-Inspector, Government Railway Police, Officer in Charge of S. E. B.

A MATHEMATICAL PROBLEM WHICH TAKES TWO MEN ONE YEAR TO SOLVE

How are ocean tides predicted ?

Year by year the Survey of India have been issuing a publication on the tide tables of the Indian Ocean. While to those who navigate the seas the importance of this publication is difficult to exaggerate, to few is it known that these predictions are made on a machine kept in the office of the Director, Geodetic Branch, Survey of India, Dehra Dun.

A Kelvin Invention

Invented in 1872 by the eminent scientist, Lord Kelvin, it was first set up at the Indian Stores Department, Lambeth, and later at the National Physical Laboratory, Teddington, and the tide tables resulting therefrom were printed in England up till 1922. In 1921 the machine was brought out to India and set up at Dehra Dun in the office of the Geodetic Branch of the Survey of India, where since 1923 all predictions and publications of tide tables for India have been carried out.

The machine is used for the annual prediction of tides at forty-one ports in the Indian Ocean for three or four years in advance, and the results obtained are announced in the annual publication issued by the Survey of India, which gives the times and heights of each high and low tide at twenty-eight ports obtained from other sources, in addition to those for the forty-one ports in the Indian Ocean predicted on this machine.

Thus the tide tables of the Indian Ocean for 1937 for 69 ports were prepared and published in October, 1936, and advance predictions for 15 ports for 1938 were despatched in September, 1936, to the Hydrographic Department of the United Kingdom, United States and Japan for inclusion in their respective tide tables.

The tide tables for 1938 were published in September, 1937, and advance predictions for 1939 were despatched the same month.

To obtain predictions of tides at any port, it is first necessary to record the height of the tide at the port throughout the twenty-four hours of the day for at least one year or preferably for several. This record is then mathematically analysed. The analysis takes two computers about one year and its result is to give a certain settings for the cams and dials of the tide predicting machine. Once the analysis of any port is completed, the machine can be set in phase to run a tidal diagram enabling the tides at that port for any year to be predicted.

DISORDER IN THE LINSEED MARKET

Producers Unnecessary Losses

BRITAIN IS INDIA'S BEST CUSTOMER

Agricultural Marketing Adviser's Report

Out of the Rs. 5 crore annual value of the Indian linseed crop, amounting to between 16 and 17 per cent of the total world produce, the original producer receives no more than 10 annas in the rupee of what is paid by the exporters and Indian millers and only a little more than half of what is paid by buyers in the United Kingdom. In the export trade, out of Rs. 3½ crores, the United Kingdom bought 44 and 55 per cent in 1934-35 and 1935-36 respectively and took no less than 74 per cent of the total Indian export in 1936-37.

This is the condition of India's trade in linseed, linseed oil and cake. To suggest remedies and to show in what way the producer can get an increased share in the huge sum earned by the trade as a whole is the main object of an important report just completed by the Agricultural Marketing Adviser to the Government of India.

The linseed plant is cultivated for its seed which yields an oil used mainly in the manufacture of varnishes and paints. No less than 4,021,000 acres were under this crop in India in 1937, variously distributed in the Central and United Provinces, Bihar, Hyderabad, Bombay Presidency and Bengal. From 4.2 million acres in 1925-26 the acreage declined till 1930-31 when it again went up to about 3.8. Since 1934-35 the total average area has been well over 3.8 million acres, reaching the 4 million mark in 1936-37. The upward trend may be attributed chiefly to the rise in the price level.

Premium On Dirt

Many trade practices have been shown to be objectionable and wasteful. The deliberate addition of dirt, it is pointed out, increases cleaning charges and freight unnecessarily.

Linseed is broadly classified commercially in India into "Bold" and "Small" types, the Bold type yielding more oil than the Small type. But the classification is crude and deprives the cultivator of the higher price to which he is entitled for the Bold variety. There is also no incentive to the cultivator to produce the cleaner and better type, as he gets no increase in price if he delivers the produce with less than the basic quantity of dirt allowed in the contract.

Classification is discussed in some detail and the report shows how arbitrary standards of contracts have retarded the growth of sound commercial practices.

Some Indian oils are actually better than imported oils, but suffer in competition because the buyer has no confidence that he will get his price's worth. An all-India Standard Contract has been agreed to by some trade interests, in discussion with the Central Marketing Staff. This defines the different types of linseed, Bold and Small, and provides for a mutual scale of premia and discounts to encourage the growers

of good quality linseed and to enable them to get the intrinsic value of their crop.

Two million tons of linseed are crushed annually in India for oil and cake, yielding some 16 million gallons of oil and 133,000 tons of cake. Apart from one-third of the oil used in the manufacture of paints and varnishes, the remainder is mostly used for edible purposes, particularly in the Central Provinces and the Central Indian States; a substantial amount is also used for the adulteration of other edible oils, e.g., mustard oil so largely consumed in the United Provinces, Bihar and Bengal.

Kisan Must Get His Due

The disadvantages from which the cultivator suffers are all due in the end to the disorganised state of marketing conditions; these are discussed in the report's 352 pages which offer practical suggestions for improvement.

Damage by water, due to defective storage, accounts for the loss of about Rs. 5 lakhs annually. A considerable quantity is also lost due to leakage during transit and the presence of a large amount of impurities.

Better prices can be secured by the producer by economy in the machinery of distribution, the control of harvest time depression, and by fixing a higher price for a better quality of produce and by expanding the market.

Interested parties have been quietly exploiting the cultivator. The market charges are numerous and weigh heavily on the producer; they are relatively high where payments and demands are made in kind instead of in cash. The *Anji* (handful) tends to swell to 4 *chattaks*. Over a dozen different kinds of charges are frequently met with in the same market. "The poor cultivator", says the report, "must feel himself lucky at the end of the day if he is left with his cart and bullocks to take home".

The report therefore recommends the establishment of regulated markets on the lines of existing cotton markets and stresses the need for provincial legislation to define the market areas, licensing persons operating therein, the registration of charges, etc.

The seasonal fall in price at harvest time in some parts is as much as 25 per cent. The report suggests that the present system of "futures" markets needs modernising and a further examination in consultation with trade interests is called for.

Attention is drawn to the difficulties arising out of the practice, most prevalent in the United Provinces, of sowing linseed mixed with other crops like wheat and gram. Area and production are already difficult to estimate owing to the want of systematic reporting in some provinces, and the total absence of records in several States. Mixed sowing intensifies this difficulty, and it has been estimated that the official statistics suffer from under-estimation by about 10 per cent in area and 17 per cent in production.

" An Obvious Loss — "

An enormous quantity of oil is used for adulteration in India. This imparts a certain amount of elasticity to local demands, but contracts the market for pure oil, an obvious loss to the trade. This is to be eliminated by the establishment of recognised markings and by encouraging the use of sound and reliable containers both for industrial and edible oils which can remain sealed till they reach the final buyer. These standard specifications and systematic markings also on the exported oils are shown to be necessary to create confidence in the buyer on the Indian and Pacific Oceans.

The report suggests that the *Ghani*, the village oil-mill, needs encouragement. The advantages of this cottage industry are set forth and while it is considered desirable to get rid of the crudities of the old-fashioned equipment to enable it to compete with the power mills, it is shown that where the *Ghani* are found closely associated with linseed production, they offer a regular outlet for the growers' linseed, and that in such areas the seasonal fluctuation in prices, as also the depression in prices at harvest time, are less marked.

It is urged that regular statistics of the amount of linseed and other oil seeds should be established.

Further expansion of the market has been carefully considered. Although the Argentine controls rather more than 80 per cent of the world trade in linseed at present, the United Kingdom provides by far the most important outlet for the Indian crop. The Ottawa agreement has improved and stabilized the trade.

Lastly the chaotic conditions prevailing in regard to weights and measures has been examined and the adoption of the 80 tola seer and the 40 seer maund in weights and the imperial gallon as the standard liquid measure throughout India is recommended.

MINIMUM EMPLOYMENT AGE

LABOUR LEGISLATION CONTEMPLATED

Legislation giving effect to the revised convention fixing the minimum age for admission of children to industrial employment, which was adopted at the International Labour Conference last year, is, it is understood, under contemplation of the Government of India.

The convention contains a special Article for India, the relevant portions of which read as follows:—

" Children under the age of 13 years shall not be employed or work in the transport of passengers or goods, or mails, by rail, or in the handling of goods at docks, quays or wharves, but excluding transport by hand..... Children under the age of 15 years shall not be employed or work.....in occupations to which this Article applies which are scheduled as dangerous or unhealthy by the competent authority."

The Article was accepted by the delegates of the Government of India to the Conference. A Bill giving effect generally to this convention is likely to be introduced in the Central Legislature in its next session.

INDUS BASIN WATER SCARCITY

INTERESTING GEOLOGICAL STUDIES

Although the Indus river is at times almost fifteen miles broad in the Mianwali district of the Punjab, yet, strangely enough, the water-supply problem in places outside its flood-plain is acute.

An investigation was lately made by the Geological Survey of India into this curious problem of water-supply in the Isa Khel and Mianwali tehsils of the Mianwali district, with special attention to the former tehsil.

The sub-surface water was analysed and a study made of the geological strata met when bores were sunk. The conclusion has been reached from an examination of the records of the deep bores at Isa Khel and Masit that a thick band of impervious clay is responsible for the artesian conditions which seem to have developed at Masit, where some 200 gallons per hour of sweet water are flowing freely from the bore.

It has also been concluded that the sweet water with the requisite hydrostatic head to produce these artesian conditions comes from the highland between the Marwat and Khasor ranges south of the Kurram river, the chief tributary of the Indus in this area.

The chief contaminating influence on the sub-surface water near Isa Khel town, according to the Geological Survey of India, appears to be the Kurram river, as its water, at times extremely saline, has been used for over two centuries for irrigation purposes, and has percolated down into the sub-surface soil.

MILITARY OFFICERS' PAY

ATTACHMENT REGULATIONS MODIFIED

The Government of India consider it desirable to draw public attention to the fact that under the operation of section 4 of the Army and Air Force (Annual) Act, 1938, the pay of officers subject to the Army Act or the Air Force Act will not be attachable by order of a court in satisfaction of a liability incurred after December 31, 1938.

The object of this change in the law is to place British and King's commissioned Indian officers of the Army and Air Force serving in India on the same footing as British officers serving anywhere else in the world and also to bring their conditions of service into line with those of Indian commissioned officers, and British and Indian other ranks, whose pay has always been exempt from attachment.

It will be observed that in respect of liabilities incurred up to December 31, 1938, the pay of the officers in question will remain attachable both up to and after that date. The application of the change in the law was deliberately confined to liabilities incurred after that date so as to render ample notice of the new position available to all potential creditors of the officers concerned.

INTERNATIONAL LABOUR CONVENTIONS

INDIA'S GOOD RECORD

That India's record of ratifications of the International Labour Conventions is good and that in labour legislation she compares favourably with countries like Great Britain, Germany, France and Italy, is revealed by the statistics of the progress of Ratifications just issued by the International Labour Office, Geneva.

The total number of conventions ratified by India up to June, 1938, was 15; Germany ratified 17, France 24, Italy 21 and Great Britain 30.

Unconditional ratifications agreed to by India related to : Hours of Work in Industries, Unemployment, Night Work (Women), Night Work (Young Persons), Right of Association (Agriculture), Weekly Rest (Industry), Minimum Age (Trimmers and Stokers), Medical Examination of Young Persons (Sea), Workmen's Compensation (Occupational Diseases), Equality of Treatment (Accident Compensation), Inspection of Emigrants, Seamen's Articles of Agreement, Marking of Weight (Packages Transported by Vessels), Night Work (Women) (Revised), and Underground Work (Women).

In addition, legislative or other measures were passed in India with reference to the application of the various Conventions bearing on : Hours of Work (Industry), Night Work (Women), Night Work (Young Persons), Minimum Age (Trimmers and Stokers), Medical Examination of Young Persons (Sea), Weekly Rest (Industry); Equality of Treatment (Accident Compensation); Seamen's Articles of Agreement; Marking of Weight (Packages Transported By Vessels); and Night Work (Women) (Revised).

In certain directions again, to the credit of India it may be said that she took action even before decisions were taken by the International Labour Conference. Thus in regard to Right of Association (Agriculture), Workmen's Compensation (Occupational Diseases), and Inspection of Emigrants, legislative or other measures were taken in India before the adoption of the Convention by the International Labour Conference.

Laws have also been enacted in regard to : Minimum Age (Industry), White Phosphorous and Protection Against Accidents (Dockers) (Revised, 1932), while legislation or further legislation is in progress or in preparation with regard to Minimum Age (Sea), and Unemployment Indemnity (Shipwreck).

EDUCATION IN AJMER-MERWARA

TWENTY-FIVE NEW PRIMARY SCHOOLS

A sum of Rs. 4,74,500 distributed as follows is likely to be spent this year on education in Ajmer-Merwara according to the budget provision for the year :—

	Rs.
University Education	88,500
Secondary Education	2,32,600
Primary Education	94,400
Special Education	16,500
General (Direction, Inspection, Scholarships and Miscellaneous).	42,500
Total ..	4,74,500

The main features of the programme drawn up for the year are the opening of primary schools to meet the increasing demand for expansion of primary education in rural areas, provision of additional teachers in primary schools for girls, of refresher courses for teachers and strengthening of the inspecting staff.

Twenty-five new primary schools, of which fifteen will be for boys and ten for girls, will be opened during the year. It is proposed also to add one more teacher to each of the ten existing girls' schools which have only one teacher at present.

A scheme for the construction of four hostels for the vernacular middle schools at Pisangan, Srinagar, Harmora and Masuda at a cost of Rs. 56,000 (non-recurring), has been sanctioned,

and a Government building at Deoli has been placed at the disposal of the Education Department for use as a hostel for the vernacular middle school there. Provision has also been made for a special non-recurring grant of Rs. 7,900 to certain non-Government secondary schools. Vocational classes have been added to some of the secondary schools.

Teachers' Refresher Courses

The establishment of a Training College for graduate teachers under the control of the Board of High School and Intermediate Education, Rajputana, Central India and Gwalior and the opening of a Women's Training Class in the Central Girls' School, Ajmer, are at present under the active consideration of Government.

Vernacular Teachers' Training Classes already exist in the Government Normal School, Ajmer, and the Mission Vernacular Final School, Beawar, and Training Classes for primary teachers are held at Bhim and Bhinai. A training class for women teachers is also maintained at Nasirabad by the Presbyterian Mission, while some pupil teachers are sent to the Delhi Women's Training School.

Steps have also been taken for the strengthening of the inspecting staff. In addition to the combined post of Superintendent of Education for Delhi, Ajmer-Merwara and Central India, there are already for Ajmer-Merwara alone one District Inspector of Schools and two District Assistant Inspectors, the number of District Assistant Inspectors has been increased from two to three, and a new wholetime post of Inspector of Schools has been sanctioned from 1937-38.

The strengthening of the inspecting staff, which provides for more adequate supervision and inspection of schools, will, it is hoped, give further impetus to the improvement and expansion of education, especially in the rural areas.

MAN'S EVOLUTION PROBLEM

INDIAN GEOLOGY THROWS LIGHT

A catalogue has recently been completed by the Geological Survey of India of the fossil remains of the anthropoid apes of India.

Of great interest as belonging to the highest order of animals living in the immediate pre-human age, and on account of their possible bearing on the history of the descent of Man, these fossil remains are chiefly to be found in the middle Tertiary sediments of India. The great rarity of fossil anthropoid remains in other parts of the world, and the usually poor state of their preservation in the ill-consolidated Tertiary sediments have invested the abundant fossil material from India with great importance. About eighty-two distinct

finds of fossil anthropoids have been recorded in India, the great majority being in the form of pieces of jaws, loose teeth and fragments of skull.

From material lent by the Geological Survey of India, scientists of the American Museum of Natural History and of the Yale North India Expeditions have recently examined these remains and classified them under about ten species belonging to four genera.

No fossil remains of primitive Man such as those found in Java, China, Palestine and Central Africa, have, however, hitherto been found in India.

An Indian Immigrant

India was not the evolutionary centre of the anthropoids, but in the period of time represented by the deposits of the Middle Siwaliks, characterised by a temperate climate and amenities for arboreal life in the wide belt of forests clothing the Himalayan foothills, northern India, says the Geological Survey of India, it became temporarily a congenial habitat for these animals, which entered India from Europe and North Africa some time in the Miocene age. During the preceding Oligocene age an important centre for monkey evolution was the Fayum region of Egypt, where species ancestral to the Indian anthropoids have been found.

Prior to the Siwaliks there is no record of fossil monkeys in India, except the *genus Pondaungia*, of uncertain systematic position, occurring in the upper Eocene (below the Oligocene) of Burma.

After the Middle Siwaliks these migrant forms from the west seem to have died out, and the Upper Siwaliks, characterised by such extraordinary variety of elephants, rhinoceros, hippopotamus, giraffes, deer, oxen, horses and carnivores, are markedly poor in their remains of the higher apes.

Better Return For Cotton Growers

(Continued From Page 18, Column 2.)

under the guidance of the Agricultural Marketing Adviser since 1935 led to the conclusion that there is great need in the Punjab for regulated markets for a number of commodities. The Central Cotton Committee therefore, decided to make a grant for a small survey, on precisely the same lines as the other marketing surveys to which the Imperial Council of Agricultural Research contributes, in order to ascertain how far regulated markets for cotton could be fitted into a general scheme for regulated markets for other agricultural commodities.

Indian Information Series

VOL. III

Simla, August 1, 1938

No. 13

CONTENTS

	Page		Page
PROVINCIAL GOVERNMENTS' GUIDE	32	Punjab Erratics	37
Cold Storage On Wheels	25	Tea Licensing Committee	44
Aerodromes : India And Burma	26	Carrier Current Telephones	47
Science In Ryots' Fields	27	Labour Conference's Decisions	50
Quetta Reconstruction	28	Education In Baluchistan	52
Irrigation Problems	29	Sir Leonard Woolley For India	55
India's Sugar Industry	30	Customs Beat Smugglers	59
Trades Unions' Regulations	34	Central Assembly Programme	60
Military And Marine Relief Fund	34	Emigration From Karachi	60

COLD STORAGE ON WHEELS MEANS——

Mangoes In Winter And Oranges In Summer

I. C. A. R. EXPERIMENTS

Fruits, vegetables, dairy products, fish and other perishables are of vital importance to the people of India. Cold storage refrigerated transport would make it safer for the trade to handle these commodities ; the consumer would gain a wider and more nourishing range of diet throughout the year and better value for his money.

The desirability of governmental help in bringing about a system of cold storage in India was first studied by the Royal Commission on Agriculture which said :—

“ Cold storage in other countries is playing such a remarkable part in marketing goods, both for export and internal consumption, with results generally profitable to private enterprise undertaking the arrangements as well as to the farmer, that we do not doubt that sooner or later there will be a similar development in India.”

This was emphasised in the report of the Agricultural Marketing Adviser to the Government of India published in October, 1937, in which he studied the conditions, preservation and transport of perishable produce in Delhi Province. He gave a useful and detailed scheme for fruits which are either consumed in Delhi or brought there for transshipment to other parts of India. The conditions of such important fruits as apples and grapes were investigated as well as those of meat, fish and eggs.

What Cold Storage Could Do

It was estimated that about 20 to 50 per cent of perishable goods were wasted

because of the inadequacy and inefficiency of the existing methods of storage.

Cold storage would make fruits and vegetables available after their natural season. It would widen the area of production ; from the producers' point of view this alone would make it worthwhile. Refrigeration would reduce wastage ; distribution would be generally more efficient. Fruits in India, as it is, do not suffer from over-production.

There is a seasonal period for fruits in India as in other countries. The important point is not merely how much can be picked in that short period, but how much can be profitably marketed. Both fruits and vegetables show great seasonal fluctuations in their supply because they are perishable. As there are no cold storage facilities available, merchants are compelled to dispose of their produce at any price they can get.

The Agricultural Marketing Adviser concluded that there was need for a commercial cold store in Delhi and that profits could be made by the storage of grapes, mangoes, oranges and potatoes alone. More could be made by the storage of other fruits and vegetables and dairy products, fish, eggs, meat and game.

He also dealt with fruit transport. He found that the losses during the hot summer months both in quality as well as in weight, of the fruit imported into Delhi, were considerable. He recommended that the advantages to be derived from a systematic cold storage scheme could be increased by refrigerated transport.

For some years the Imperial Council of Agricultural Research has been financing experiments in Poona in cold storage of different kinds of fruit and vegetables. These researches have been hitherto particularly concerned with such fruits as mangoes, oranges from Nagpur and Malta oranges from the Punjab. The preservation qualities of potatoes and other vegetables are also being tested.

A long series of experiments are needed, and a number of conditions have to be taken into consideration in recommending to the commercial world whether the preservation of particular fruits and vegetables is desirable or not. The temperature and humidity, the storage life of different fruits (*i.e.*, the length of time for which they could be preserved without commercial depreciation), the best varieties for storage, the stage of ripeness at which they should be picked—all these and other relative factors have to be taken into account in making these experiments on cold storage.

What Is "Gas" Storage?

Research work on English fruits has shown that by 'gas storage', when the percentage of carbon dioxide in the atmosphere is raised, the period of successful storage can be lengthened.

The Imperial Council of Agricultural Research have had an expert trained in England at Cambridge and East Malling in the technique of this new method, which he is now testing on Indian fruits.

The Poona station is concerned mainly with general experiments. Another station at Lyallpur (Punjab) is directly concerned with local products, but specifically deals also with the commercial possibilities of cold storage. Several local varieties of fruits and vegetables as well as other commodities have been the subject of experiment at Lyallpur, especially Malta oranges.

An Ingenious Idea

The Defence Department in conjunction with other Departments, such as the Imperial Council of Agricultural Research, has examined three types of vans for refrigerated railway transport and two types for road transport.

For refrigerated road transport they have examined the possibilities of a cold storage insulated van free from all mechanical contrivances and delicate equipment.

Vehicles of this type should appeal to commercial users since two bodies could be built for one chassis, one insulated and the other of the normal load-carrying type, the bodies being changed according to seasonal traffic requirements.

Although the military cold storage scheme has been dropped, experiments in cold storage transport are being continued. A joint committee of the Defence, Railway and Finance Department, the Agricultural Marketing Adviser to the Government of India and the Imperial Council of Agricultural Research considered testing two different systems of refrigeration for railway transport, namely, mechanical refrigeration and freezing through the medium of dry ice.

Mechanical refrigeration is effected by the system of eutectic tanks which are previously charged to a low temperature by electrical machinery. This method is promising and a van containing the equipment has been completed and subjected to experiments between Rawalpindi and Landi Kotal. Unless a commercial firm comes forward to operate the vehicle in its present form, it will, after the tests are completed, be converted into an ordinary cold storage van with wet ice bunkers for public use, similar to the vans already in use on railways for several years.

The building of a van for the dry ice method was begun, but lack of interest on the part of dry ice concerns has held up its completion.

One difficulty about the dry ice method is that there is no large commercial production of dry ice in India. Its possibilities as a commercial proposition remain to be explored. In any case, without cold storage depots adjacent to railway tracks, there is little possibility of dry ice proving a suitable medium for refrigerated railway transport in India. Any experiments that may be carried out must therefore remain for some time at any rate, purely of academic interest.

WHERE TO LAND IN INDIA

COMMERCIAL PILOTS PLEASE NOTE

A comprehensive list of 166 aerodromes and landing grounds for civil aircraft in India and Burma, with the conditions governing their use, has been published by the Director of Civil Aviation, Government of India, in a recent notice to airmen. These aerodromes have been divided into different classes. Class A in Part I are civil aerodromes and landing grounds licensed or approved for public use and normally maintained in good condition. Class B are for private use, normally in serviceable condition, but their unserviceability is not necessarily notified.

A large number of military aerodromes in the charge of the Royal Air Force and Army landing grounds are also available to civil aircraft, subject to certain conditions.

There is a list in Part III of aerodromes and landing grounds in Indian States. These are generally in good condition but their temporary unserviceability is not always notified. Prior permission is usually necessary for their use. Jodhpur has about 13 such aerodromes, by far the largest number.

The military aerodromes are not available for scheduled air services nor for displays or joyriding, but are open to commercial and private aircraft on *bona fide* long distance flights, provided adequate notice is given.

Pilots are, however, warned that the mere fact that a particular aerodrome or landing ground is mentioned in this Notice does not imply that it is suitable for use by all types of civil aircraft. They are advised always to consult the schedule of the aerodrome published in the Air Pilot, India and Burma, and to take the necessary precautions to ensure a safe take off.

SCIENCE IN RYOTS' FIELDS

Planning Agricultural Prosperity

GOVERNING BODY OF THE IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH PLANS

The Governing Body of the Imperial Council of Agricultural Research which met in Simla on July 5 and 6, with The Honourable Kunwar Sir Jagdish Prasad, K.C.S.I., C.I.E., O.B.E., in the chair, reviewed the financial position and settled the amount of money available for renewal of running schemes and to initiate new schemes.

It considered the report of the Advisory Board on the general research programme of the Council and approved the recommendations. The importance of cattle improvement, milk production and fodder crops, improvement of grasslands, research in millets, pulses, fertilisers and dry farming experiments was recognized. The Advisory Board's recommendations were intended to keep the research programme balanced.

The Advisory Board's recommendation that special attention should be given to genetics in rice research—the scientific basis of plant breeding, a study of the water requirements of the rice plant and fertiliser experiments—was approved.

Apart from other provincial schemes which are continuing, rice research schemes in United Provinces, Central Provinces and Assam now due for renewal were sanctioned. The experiments carried on in the Indian Institute of Science, Bangalore, to improve the quality of rice are to be continued. Two other renewals were the study of agricultural research statistics done by Dr. Mahalanobis of the Calcutta University, and the study of the protoplasm—the ultimate living portion of the plant cell—by Dr. Bosi Sen as very useful results were anticipated from these studies.

The Governing Body also considered the summary of practical results achieved in the five-year scheme of sugar cane research and it was decided to prepare such summaries for other research schemes as well. Two are already well in hand, namely, on dry farming and on manurial experiments with rice.

War Against Pests

Continuation of the research scheme on indigenous insecticides in the Mysore State and dry farming experiments in Bombay and Hyderabad was approved.

Renewal of the central sugar cane insect pests scheme, carried on by the Imperial Agricultural Research Institute, New Delhi, was agreed to for a further three years. The expansion of the provincial section of the main sugar cane insect research scheme, involving work at eleven more sub-stations in various parts of India, and a scheme of research in sugar cane genetics, now being carried on at Coimbatore and the sub-station at Karnal, were also approved. Sugar cane research schemes in Madras, U. P., the Punjab, Bombay and Mysore were sanctioned.

The Governing Body agreed to continue the locust research scheme, carried on at sub-stations in Sind, Baluchistan and Rajputana, where the movements of the locust are kept under observation.

An important scheme for the study in Kashmir of the *San Jose* pest—a scale insect widely distributed in temperate climates which damages practically all temperate climate fruits was approved. The *San Jose* pest foreign to India has become a menace to Kashmir, the N.-W. F. Province and Kulu orchards in the Punjab.

A small grant was sanctioned for the study in Bhopal of the means of eradication of a pestilential weed known as *Kans grass*, common also throughout the Central Provinces and Central India.

India's Place In The Coffee World

An important scheme to improve the quality of Indian coffee, put forward by the Mysore State, which will bear a considerable portion of the cost, was approved. The Brazilian competition due to overproduction was noted and it was felt that the work of the Indian Coffee Marketing Board in London showed that the higher grade coffee of India always found a ready sale and a good price in England and the Continent. The lower grades, however, had to face keen competition from other countries. The Mysore scheme includes a study of the factors determining quality, in order to secure a general improvement of Indian coffee and increased production of the first grade quality.

A scheme for the utilisation of molasses for filter press and cake in the reclamation of alkaline land in the United Provinces was sanctioned.

It was decided to extend the Council's scheme of research on black rust on wheat to Bombay and the Central Provinces. Starting in the hills this disease affects the wheat crop all over India. Research is, therefore, to be carried out both in the hills and in the plains.

A proposal to give special training in tobacco curing, etc., to one of the assistants on the staff of the tobacco sub-station at Guntur and a scheme for research on citrus fruits in Orissa were approved.

Animal Husbandry

In the Animal Husbandry, sanction was given for a short enquiry into the indigenous system of treatment of cattle. The extension of a scheme by which the Imperial Council now gives a grant to every province for a veterinary investigation officer to study animal diseases, was approved as favourable reports on the scheme have been received.

To combat John's disease which seriously affects milch cattle, a grant for research in Mysore was sanctioned for three more years.

The continuance of a research scheme on the composition of milk, carried on in the Agricultural Institute, Allahabad, was agreed to. New grants were given to four provinces—Madras, Bombay, United Provinces and the Punjab—to establish milk recording societies. Provisional approval was given to a number of other schemes regarding which certain details have still to be worked out.

Annual progress reports on about thirty research schemes were discussed. These reports are examined by technical committees of the Advisory Board and also by the Board itself and then passed on to the Governing Body. A summary of these schemes will be given in the general annual report of the Council to be published shortly.

The Governing Body approved the report of the Joint Committee which met on July 4, to consider the measures to be adopted to bridge the gap between the cultivator and the activities of Government research workers.

The following members of the Governing Body were present :—

Sir Bryce C. Burt, Vice-Chairman, Imperial Council of Agricultural Research; The Hon. Mr. V. I. Muni-swami Pillay, Minister for Agriculture, Madras; The Hon. Mr. Morarji Desai, Minister for Agriculture, Bombay; The Hon. Dr. K. N. Katju, Minister in charge of Agriculture, United Provinces; The Hon. Rai Bahadur Chaudhuri Sir Chotu Ram, Minister for Development, Punjab; The Hon. Dr. Syed Mahmud, Minister for Agriculture, Bihar; The Hon. Mr. Abdul Matin Chaudhuri, Minister for Agriculture, Assam; The Hon. Mr. Nityenanda Kanungo, Minister for Agriculture, Orissa; Mr. N. Madhava Rau, Member in charge of Agriculture, Mysore State; Mr. K. V. Uplap, Member in charge of Agriculture, Baroda State; Rai Bahadur Raja Oudh Narain Bisarya, Revenue Member, Bhopal; The Hon. Mr. Hossain Imam, Member, Council of State; Pandit Sri Krishna Dutt Paliwal, M.L.A.; Mr. Mohd. Azhar Ali, M.L.A.; Mr. R. Scherer, Associated Chambers of Commerce, Bombay; Mr. B. K. Badami, Director of Veterinary Department, Hyderabad (Deccan); Mr. M. W. Yeatts, C.I.E., I.C.S., Joint Secretary, Government of India, Department of Education, Health and Lands; Mr. F. Ware, C.I.E., Animal Husbandry Expert, Imperial Council of Agricultural Research; Mr. H. R. Stewart, I.A.S., Agricultural Expert, Imperial Council of Agricultural Research; Mr. D. R. Sethi, I.A.S., Agricultural Marketing Adviser, Government of India.

RECONSTRUCTION OF QUETTA

EARTHQUAKE PRECAUTIONS

The military side of the reconstruction of Quetta is estimated to cost approximately Rs. 7 crores. Up to the present time, of this sum approximately Rs. 1½ crores have been spent and building is in progress. Generally speaking, the expenditure so far incurred and the work now in progress comprises accommodation for one British Infantry battalion who are in occupation of their barracks, two Gurkha battalions with their families, one Field Company Sappers and Miners, the British Military Hospital, including accommodation for administrative personnel, the Indian Military Hospital including accommodation for the Indian Hospital Corps, five messes, and eighty-two bungalows of which a number are already occupied.

The Staff College is to be rebuilt on its present site and contractors have now in hand the work of construction for the Staff College mess and single officers' quarters. Later the construction of the main building, lecture hall, etc., will be undertaken.

An officers' hotel is also under construction. This is being built by Government as a measure of economy in the place of thirty officers' bungalows. It is hoped that this will open early next year.

In addition to this, accommodation for a detached company at Shelabagh near the Khojuk tunnel has already been completed and the lines occupied.

When the decision to rebuild at Quetta was taken, the Government of India laid down that all residential buildings and certain others should be constructed to withstand an earthquake of a certain intensity. This condition has been met in a variety of ways. Small buildings with numerous party walls are built of brick in cement mortar reinforced with steel in certain of the joints; larger buildings have been framed with reinforced concrete pillars, the panels between the pillars being filled in some cases by reinforced brick, in others by thin reinforced concrete walls and in a few cases by a specially light form of construction based on steel wire mesh and plaster.

One of the principles on which the new Quetta cantonment was laid out was that full use was to be made of the existing roads and other services. Quetta will be a modern cantonment in every way. The whole is on water borne sewage, including Indian Troops lines, followers' quarters, etc. Indian Troops barracks will be lit with electric light, as well as all bungalows and British Troops barracks. As much use as possible is being made of existing gardens; and, though there will be fewer troops in Quetta than in pre-earthquake days, it is hoped that the area in which troops and bungalows will be located will be even more attractive than of old.

SOLVING INDIA'S IRRIGATION PROBLEMS

Research Workers Meet

CENTRAL IRRIGATION BOARD

In view of the rapid increase in India's population and consequent increased pressure on the land, the demand for more water for irrigation, and for better distribution of the existing supplies, becomes annually more insistent and this demand can only be met with the help of well-conducted and well-directed research.

This was what Mr. M. R. Richardson, C.I.E., President of the Central Board of Irrigation, said at the eighth annual meeting of the Research Committee of the Board held recently at Simla, in drawing attention to the growing importance of irrigation research.

The proceedings of the Committee opened with a discussion of the research officers' annual reports. The Director of the Central Hydrodynamic Research Station at Poona presented a comprehensive report of the many experiments carried out at the Station on behalf of Provinces, Railways and States.

That this Station has been serving a useful purpose was evident from the amount of work carried out during the previous year and from the number of demands made on it for new experiments. The question of the continuance of the Station at Khadakvasla, near Poona, is now under the consideration of the Government of India who are financing it until the end of the current financial year.

Training Rivers

One of the conclusions reached by the Research Committee, as a result of the discussions, was that for the solution of river training problems with the assistance of models, the larger the model the better, and that in many cases it was essential to have several models owing to the complications arising out of reduction in the dimensional scales and the time of flow.

The Committee also discussed at length the problem of seepage of water from canals and its prevention.

Apart from the value of the water itself which is lost, the value of land which might go out of cultivation as a result of a rise in the water-table is another factor to which attention has to be given in considering this problem.

The problem is really two-fold. On the one hand, rain and irrigation water operate to raise the water-table to some extent; and, on the other hand, a considerable quantity of water escapes to the subsoil through some irrigation channels and it may be necessary in some cases to provide some form of lining to prevent this loss; but before lining can confidently be recommended, it is necessary to ascertain the quantities lost through the various channels.

Seepage Losses

There is considerable variation in these losses largely dependent as they are upon the nature

of the soil forming the channel, but it has also been discovered that the depth of the water-table below the channel may be an important factor in the quantity of seepage. The seasons, too, have their effect, since seepage is greater when the water is warm than when it is cold, and also the level of the water-table changes with the season. It is important, therefore, to measure the losses from the canals throughout the year, and in order to eliminate the inevitable errors in measuring the discharges a large number of observations is necessary.

The Committee accepted certain methods of measuring the losses and recommended that alternative methods should also be tried in order to secure a comparison of results.

The values of certain types of lining were discussed and the recommendation made that experiments should be carried out to ascertain the probable life of the sodium carbonate treatment under field conditions.

A comparison was made, in the course of discussions, of the cost and efficiency of the re-inforced brick tile and cement plaster lining adopted for the main canal of the Haveli Project with those of an asphalt, silt, sand lining which has been evolved in Bengal.

Investigations in hand to determine the most efficient low-cost canal fall also came up for discussion. A study will be made of new falls on the Pakpattan link in the Punjab and experiments conducted on their models. It is expected that as a result of these studies valuable data will be available for the consideration of the Committee when they meet next year.

Excluding Silt

A new subject considered this year was Silt Excluders and Ejectors. In twelve years, the Upper Jhelum Canal had lost about 40 per cent of its capacity on account of silting, but, as explained to the Committee, with two Excluders and three Ejectors built on the canal, the flow has largely been restored.

The Committee discussed the programmes of work to be carried out at the research stations

(Please Turn To Page 50.)

INDIA'S SUGAR INDUSTRY

Review of 1936-37 Crop Year

INCREASED AREA PLANTED

By R. C. Srivastava, B.Sc., O.B.E.,

Director of the Imperial Institute of Sugar Technology, Cawnpore.

The area planted with sugarcane in India, during 1936-37, was estimated at 4,451,000 acres as against 4,020,000 acres in the previous year, an increase of over 10 per cent.

The estimated yield from this area was 6,717,000 tons, stated in terms of *Gur* or *jaggary*, as against 5,908,000 tons in the previous year, an increase of 14 per cent. It is estimated that the total equivalent yield of cane during 1936-37 was 67,322,000 tons of sugarcane as against 61,202,000 tons in 1935-36. Table I shows the area planted with cane, the area under improved and deshi varieties and the total outturn, as *gur*, for the major provinces for the last two years, says the Review of the Sugar Industry of India for the crop year 1936-37, just published.

The season on the whole was reported to be generally favourable to the crop everywhere. The crop was in good condition in most places, free from frost, pests and diseases throughout.

Manufacturing

One hundred and forty factories worked with cane as against 137 last season, their production of sugar amounted to 1,128,900 tons as against 932,100 tons in 1935-36, the increase being mainly due to the abundance of cane available during the season. The average recovery for the season for All-India was 9.50 against 9.29 in 1935-36. The average recovery for the United Provinces and Bihar was 9.65 and 9.20 as against 9.60 and 8.93 during 1935-36.

Only nine refineries worked during the calendar year 1937 giving a production of 19,500 tons as against 13 in the previous year which produced 50,100 tons; the decrease was primarily due to the low prices for *gur* prevailing during the season, which made it unprofitable to refine sugar from *gur*.

The total production of sugar by the indigenous process was estimated at 100,000 tons as against 125,000 during 1935-36.

The gross amount of excise duty in Rupees realised on sugars is shown below :—

	From April 1935—March 1936.	From April 1936—March 1937.
On Khandsari sugar ..	60,078	47,411
On sugar other than Khandsari	1,57,90,865	2,56,23,876

Sugar Machinery Trade

The value of sugar machinery imported in India during the financial year 1936-37 was Rs. 95,16,462 as against Rs. 65,71,502 during the previous year. Of the total, the value of the machinery imported from United Kingdom alone during 1936-37 was Rs. 68,49,673 as against Rs. 49,70,581 during the previous year.

Sugar Trade

A very small portion of the sugar required for consumption in India is now imported. The imports during 1936-37 (April-March) amounted to only 23,100 tons valued at Rs. 24 lakhs as against 201,200 tons in the previous year valued at Rs. 1.91 lakhs.

It is estimated that 1,074,000 tons of sugar were consumed during the period November 1, 1935—October 31, 1936 as against 1,059,000 tons during the preceding period. The quantity of sugar consumed during the period November 1, 1936 to October 31, 1937, is estimated at about 12 lakhs tons. Details of production and consumption of sugar in six major provinces together with figures for the per capita consumption during the crop year 1935-36 are shown in Table II. It is estimated that the opening stocks of sugar as on November 1, 1936 and the closing stocks as on October 31, 1937 at mills for the crop year 1936-37 were 130,000 tons and 175,000 tons respectively.

Sugar Prices

Very low prices for Indian sugars prevailed during the season. The year opened with sugar at Rs. 7-12-0 per maund but as the new sugar became available the price declined. The price in the beginning of January, 1937, stood at Rs. 6-12-0, and the decline continued till the minimum of Rs. 6-1-0 was reached in June, 1937. Some improvement was noticed from July onwards, mainly due to the coming into existence of the Indian Sugar Syndicate on July, 12, 1937. In October, the price stood at Rs. 6-11-0 per maund as against Rs. 7-12-3 per maund in October previous.

Table III shows the monthly average prices for five typical crystal 1 sugars Marhowrah, Balrampur, Pilibhit, Basti and Rosa, *ex-factory*

(Please Turn To Page 60.)

Table I.

Provinces.	Area in thousand acres.				Total yield in (000) tons of raw-sugar.	
	Under Improved Varieties.	Under Deshi Varieties.	Under Improved Varieties.	Under Deshi Varieties.	1936-37.	1935-36.
	1936-37.	1936-37.	1935-36.	1935-36.		
United Provinces (including Ram-pur).	2,263	256	1,998	251	3,894	3,336
Punjab	298	253	220	254	434	360
Bihar	422	38	421	26	675	635
Bengal	290	65	244	81	654	560
Madras	71	51	69	50	339	329
Bombay (including states) ..	31	98	22	103	309	319

Table II.

Provinces.	Production (in 000 tons).	Consumption (in 000 tons).	Per capita consumption (in lbs.).
Bengal	31	158	6.7
Bombay	36	212	15.5
Madras	34	72	2.8
Bihar and Orissa	258	62	3.1
United Provinces	647	131	5.6
Punjab (N.-W. F. P. & Delhi) ..	29	233	14.6

Table III.

Month.	Prices in Rupees per maund.				
	Marhowrah.	Balrampur.	Pilibhit.	Basti.	Rosa.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
November, 1936	8 8 0	7 8 0	7 7 0	7 7 0	7 7 0
March, 1937	6 8 0	6 6 0	6 9 0	6 8 0	6 10 0
June, 1937	6 2 4	6 0 9	6 1 6	6 1 0	6 3 6
October, 1937	6 12 0	6 10 6	6 12 6	6 10 0	6 11 6

Table IV.

Month.	Average price of gur per maund.					
	Lyallpur.	Meerut.	Bhagalpur.	Dacca.	Madras.	Ahmed-nagar.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
November, 1936	4 3 6	3 2 4	2 11 0	3 15 0	3 9 4	4 1 0
March, 1937	2 15 0	2 6 6	2 0 0	4 2 0	3 4 8	3 5 6
October, 1937	3 12 0	3 2 4	2 1 0	5 0 9	3 4 0	3 0 0

Indian Information Series

QUICK REFERENCE TO

THE PROVINCIAL GOVERNMENTS

The Principal Information Officer recently requested the Provincial Governments to answer the questions set out below in order that they might be collated in the Indian Information Series.

The replies, numbered to correspond with the questions, will be found in the following pages.

All the information published has been supplied by the Provincial Governments. The information given for each Province is not always uniform because some Provinces answered in greater detail than others.

The date in brackets given after the name of each Province is the date on which the information was drawn up.

Subsequent changes will be given in full in future issues when supplied by the Provincial Governments.

By the aid of footnotes (signed "Editor") an attempt has been made to draw attention to any changes already known to have occurred. The accuracy of these footnotes cannot be guaranteed.

QUESTIONS

1. Full name, and titles, of Governor, his date of appointment and date of retirement.
2. If on leave, full name, and titles, of acting Governor; date and period of his appointment.
3. Full name and titles, if any, of Governor's Secretary.
4. Full name and titles of all members of the Ministry, the community and the party to which each belongs. Political complexion of the Ministry, e.g., Congress, or Coalition, etc.
5. The names of Parliamentary Secretaries to Ministers, the community and the party to which they belong. Where there are no Parliamentary Secretaries, this is stated.
6. Numerical strength of the Government's supporters in the Assembly.
7. Numerical strength of the Government's supporters in the Upper House, where there is one.
8. Total number of seats in the Assembly.
9. Total number of seats in the Upper House, if any.
10. List and numerical strength of the Opposition parties in the Assembly.
11. List and numerical strength of the Opposition parties in the Upper House, if any.
12. Date of formation of the present Ministry.
13. Normal dates at which Sessions of the Assembly are held in the course of the year.
14. Normal dates of the Sessions of the Upper House, if any.
15. Name of the Chief Secretary to Government, and the date of his appointment.
16. Name of the capital of the Province, with population, and the population of the Province.
17. Name of the summer Capital, if any, and its population.
18. Estimated budget revenue for the current year.
19. List, with dates, of the principal Acts passed by the Government since its formation, together with a three line explanation of the objects of each Act.
20. List of the principal Government Bills introduced, together with a three line explanation of the objects of each Bill.

ASSAM (27-5-38)

1. Sir Robert Niel Reid, K.C.S.I., K.C.I.E., I.C.S.*

Appointed : March 4, 1937.

Retires : November 25, 1942.

2. Not on leave.

3. J. P. Mills, I.C.S.

4. (1) Maulavi Saiyid Sir Muhammed Saadulla, Chief Minister ; Portfolios : Finance, Home and Public Works. Party : Muslim League (All India).

(2) Rev. J. J. M. Nichol-Roy : Local Self-Government and Medicine. Indian Christian (Khasi Hills Tribal). Progressive Party (Assam).

(3) Srijut Rohini Kumar Chaudhuri : Revenue and Forest. Hindu United People's Party (Assam).

(4) Maulvi Munawwar Ali : Education and Excise. Muslim League (All-India).

(5) Maulvi Abdul Matin Chaudhuri : Agriculture, Industries, Co-operative Societies and Judicial. Muslim League (All-India).

(6) Babu Akshay Kumar Das : Registration, Legislative and General Department. Hindu, Kaibartta (Scheduled caste). Party : Constitutionalist.

Coalition Ministry.

5. No Parliamentary Secretaries.

*Is now acting as Governor of Bengal during Lord Brabourne's absence. Mr. G. P. Hogg is acting as Governor of Assam—(Ed.).

6. (1) Muslim League Party ..	24
(2) Progressive Nationalist Party ..	11
(3) Constitutionalist Party ..	3
(4) European Group ..	10
(5) Assam Valley United People's Party ..	8
(6) Independent ..	2
	<u>58</u>

7. No Minister has been appointed from the Upper House and there is no regular party or group in support of the Government.

8. One hundred and eight.

9. Twenty-one (18 elected and 3 nominated).

10. (1) Congress ..	32
(2) Muslim United Party ..	7
(3) Independent ..	10
	<u>49</u>

11. No parties have been formed by the members.

12. February 5, 1938.

13. No normal dates and periods have yet been fixed. There were three Sessions of the Assembly in 1937 : (1) April, (2) August-September and (3) December, 1937.

14. Generally February and August.

15. J. A. Dawson, C.I.E., I.C.S., from January 11, 1938 (on leave). H. G. Dennehy, C.I.E., I.C.S., officiating from May 10, 1938.

16. Shillong : 26,535.

Province : 8,622,251.

17. No summer capital.

18. Rs. 2,64,24,000.

19. Principal Acts Passed by the Assam Legislature, 1937-38 :

Title of Act.	Date of Governor's Assent.	Objects.
The Assam Speaker's Salary Act, 1937.	November 5, 1937.	To determine the salary of the Speaker of the Assam Legislative Assembly, under the provisions of section 65 (4) of the Government of India Act, 1935.
The Assam Deputy Speaker's Salary Act, 1935.	November 5, 1937.	To determine the salary of the Deputy Speaker of the Assam Legislative Assembly under the provisions of section 65 (4) of the Government of India Act, 1935.
The Assam Ministers' Salaries Act, 1937.	November 5, 1937.	To determine the salaries of the Governor's Council of Ministers under the provisions of section 51 (3) of the Government of India Act, 1935.
The Assam President's Salary Act, 1937.	November 5, 1937.	To determine the salary of the President of the Assam Legislative Council under the provisions of sub-sections (4) and (5) of section 65 of the Government of India Act, 1935.
The Assam Deputy President's Salary Act, 1937.	November 5, 1937.	To determine the salary of the Deputy President of the Assam Legislative Council under the provisions of sub-sections (4) and (5) of section 65 of the Government of India Act, 1935.
The Assam Legislative Chambers (Members' Emoluments) Act, 1938.	February 26, 1938.	To fix the salaries and allowances of members of the Assam Legislative Chambers under the provisions of section 72 of the Government of India Act, 1935.

20. Principal Government Bills Introduced :

Name of Bill.	Objects.
The Assam Provincial Legislature (Removal of Disqualifications) Bill, 1937.	To provide for the removal of certain disqualifications for elections to the Assam Legislature under section 69 (1) (a) of the Government of India Act, 1935.
The Good Conduct Prisoners' Probation Release Bill, 1937.	To provide for the release of good conduct prisoners, on conditions imposed by the Provincial Government.

WHAT EVERY TRADES UNIONIST SHOULD KNOW

Regulations applicable to Trade Unions, whose objects are not confined to one province, have now been made by the Central Government and published for general information.

The fee payable for the registration of a Trade Union is Rs. 5, and the registered Trade Unions will now be required to submit to the Registrar by July 31, each year, annual returns in prescribed forms.

Rules have also been laid down for the audit of the accounts of unions and provision made for the simultaneous audit of the political fund of the unions by the same auditor or auditors.

The auditors will henceforth be required to indicate in their report every payment which appears to be unauthorized under the rules of the Trade Union, or contrary to the provisions of the Indian Trade Unions Act, the amount of any deficiency or loss which appears to have been incurred by the negligence or misconduct of any person and the amount of any sum that ought to have been, but is not brought to account by any person.

In case of the dissolution of a union, where it is necessary for the Registrar to distribute the funds of the union, he is now required to divide the funds in proportion to the amount contributed by members by way of subscriptions during their membership.

Cancellation Of Registration

Details are also given as to how an application for the cancellation of the registration shall be dealt with. On receipt of such an application, the Registrar, before granting the application, is required to satisfy himself that the withdrawal or cancellation of registration was approved by the general meeting of the Trade Union or if it was not so approved that it had the approval of the majority of the members of the Trade Unions. For this purpose he may call for such further particulars as he may deem necessary and may examine any officer of the Union.

If the application is made by a Trade Union, which has previously been registered by the

Registrar of any province, the union shall submit with its application a copy of the certificate of registration granted to it and copies of entries relating to it in the registration of Trade Unions required for the province.

As for alterations made in the rules of the Trade Union, the regulations provide that the Registrar, unless he has reason to believe that the alterations have not been made in the manner provided in the rules of the Trade Union, shall register the alteration in the register to be maintained for this purpose and shall notify the fact that he has done so to the Secretary of the Trade Union.

Any document in the possession of the Registrar received from a registered Trade Union can be inspected by any member of that union on payment of a fee of annas eight for each document inspected.

INDIA AND BURMA MILITARY AND MARINE RELIEF FUND

The Indian Soldiers' Board at their 1st half-yearly distribution of relief for 1938 from the India and Burma Military and Marine Relief Fund made grants amounting to Rs. 11,430 to *ex*-soldiers and their dependants in the various provinces and administrations as shown below :—

	Rs.
Punjab	3,982
United Provinces	2,518
North-West Frontier Province	1,942
Kashmir (including Poonch)	662
Punjab States	524
Bengal	520
Rajputana	408
Madras	344
Orissa	168
Hyderabad (Deccan)	130
Bihar	80
Mysore	80
Bombay	72
Total	11,430

BENGAL (11-6-38)

1. Lord Brabourne, G.C.S.I., G.C.I.E., M.C.

Appointed : November 27, 1937.

2. Lord Brabourne will officiate for four months as the Viceroy and Governor-General of India from June 25, 1938.

Sir Robert Niel Reid, K.C.S.I., K.C.I.E., Governor of Assam, will officiate in Lord Brabourne's place during that period.

3. L. G. Pinnell, C.I.E., I.C.S. (on leave).

J. D. Tyson, C.B.E., I.C.S. (Offg.).

4. (1) Abul Kasem Fazlul Huq, Chief Minister and Minister for Education (Moslem—Coalition).

(2) Nalini Ranjan Sarker, Finance (Hindu—Coalition).

(3) Khwaja Sir Nazimuddin, K.C.I.E., Home (Moslem—Coalition).

(4) Sir Bijoy Prasad Singh Roy, Kt., Revenue (Hindu—Coalition).

(5) Nawab Khwaja Habibullah Bahadur, of Dacca, Agriculture and Industries (Moslem—Coalition).

(6) Maharaja Srischandra Nandy, of Cosimbazar, Communications and Works (Hindu—Coalition).

(7) Huseyn Shaheed Suhrawardy, Commerce and Labour (Moslem—Coalition).

(8) Nawab Musharruf Hossain, Khan Bahadur, Judicial and Legislative (Moslem—Coalition).

(9) Syed Nansher Ali, Public Health and Local Self-Government (Moslem—Coalition).*

(10) Prasanna Deb Raikut, Forest and Excise (Hindu—Coalition).

(11) Mukunda Behary Mullick, Co-operative Credit and Rural Indebtedness (Hindu—Coalition).

Coalition Ministry.

5. No Parliamentary Secretaries.

6. (1) Coalition Party ..	99
(2) Scheduled Caste Group ..	16
(3) European Group ..	25
(4) Anglo-Indian Group ..	4
(5) Nationalist Group ..	10
(6) Indian Christian ..	1

155

7. (1) Krishak Proja Party .. 9

(2) League Party .. 7

(3) European Group .. 6

(4) Not belonging to any party .. 16

38

8. Two hundred and fifty.

9. Not more than sixty-five of which between six and eight are filled by nomination. At present six have been nominated.

The total number of existing members is 63.

10. (1) Congress Party .. 53

(2) Proja Group .. 19

(3) Krishak Proja Group .. 10

(4) Members not belonging to any Party or Group .. 6

(5) Scheduled Caste Group .. 5

(6) Nationalist Group .. 1

94

11. (1) Congress Group .. 13

(2) Progressive Party .. 6

(3) Not belonging to any Party 5

24

12. April 1, 1937.

13. February—April.

July—August.

November—December.

} Probable sittings.

14. April 1, 1937.

July-August, 1937.

September, 1937.

January 24—April 2, 1938.

July-August, 1938.

15. G. P. Hogg, C.S.I., C.I.E., I.C.S.*

Appointed : January 20, 1934.

16. Calcutta : including Fort William : 1,199,817 (in 1931).

Bengal : 51,087,338 (in 1931).

17. Darjeeling : 19,903.

18. Rs. 18,63,80,000.

*Since resigned. His portfolio has passed to Huseyn Shaheed Suhrawardy—(Ed.).

*Is now acting as Governor of Assam—(Ed.).

19. Principal Acts Passed by the Bengal Legislature, 1937-38 :

Bengal Ministers' Salaries Act, 1937 (Bengal Act I of 1937). Gazetted October 5, 1937. Fixes salaries of the Governor's Council of Ministers.

Bengal Legislative Chambers (Members' Emoluments) Act, 1937 (Bengal Act II of 1937). Gazetted October 5, 1937. Fixes salaries and allowances of members of the Bengal Legislative Chambers.

Bengal Legislature (Removal of Disqualifications) Act, 1937 (Bengal Act III of 1937). To remove disqualifications of persons from being members of the Bengal Legislature who hold certain offices of profit under the Crown in India.

Bengal Cruelty to Animals (Amendment) Act, 1938 (Bengal Act I of 1938). To deal more effectively with the operation called *phooka*.

Bengal Rhinoceros Preservation (Amendment) Act, 1937 (Bengal Act II of 1938). To restrict selling and buying or possessing any part of a rhinoceros without the permission of the Provincial Government unless it is private property.

Bengal Famine Insurance Fund Act, 1937 (Bengal Act III of 1938). To establish and maintain the Bengal Famine Insurance Fund for expenditure upon relief of, and insurance against, famine and distress caused by serious drought, flood, earthquake and other natural calamities.

Bengal Expiring Laws Act, 1938 (Bengal Act IV of 1938). Provides for the continuance of certain Bengal Acts.

Bengal Public Demands Recovery (Amendment) Act, 1938 (Bengal Act V of 1938). Provides for the realisation of dues of the land mortgage banks registered under the Co-operative Societies Act, 1912.

20. Principal Government Bills Introduced :

Bengal Tenancy (Amendment) Bill, 1938. Passed by both Chambers of the Bengal Legislature, now awaits the assent of H. E. the Governor. To lessen the burden on the cultivators by making such amendments to the law which appear to be most urgently required, namely :—

- (1) Abolition of landlord's transfer fees and the right to pre-emption.
- (2) Repeal of Chapter XIII A which allows landlords the use on certain conditions of the certificate procedure for realising their rents.
- (3) Giving under-raiyats the right to surrender their holdings.
- (4) Imposing fine for the exaction of *abwabs*.
- (5) Empowering Government to suspend any or all of the provisions of the Act relating to the enhancement of rent.
- (6) Giving powers of surrender to tenure-holders.
- (7) Allowing landlords to sue for a portion of their arrears of rent instead of for the whole amount.
- (8) Giving increased facilities for the sub-division of tenures and holdings.
- (9) Providing for the suspension or abatement of rent when a tenure or holding is lost by diluvion.
- (10) Reducing the rate of interest on arrears of rent from 12 per cent to 6½ per cent.
- (11) Giving occupancy under-raiyats the same rights of transfer as occupancy raiyats.
- (12) Giving facilities to occupancy-raiyats to regain possession, under certain conditions, of mortgaged holdings.

Bengal Legislative Chambers (Presidents and Speakers Salaries) Bill, 1937. Passed by the Legislative Assembly. The Legislative Council passed it with amendments to which the Assembly did not agree. The fact of disagreement has been referred to the Governor as required under the rules. Provides for the salary of the Speaker and Deputy Speaker of the Bengal Legislative Assembly and that of the President and Deputy President of the Bengal Legislative Council.

Government Bills introduced and passed by the Assembly in the February-April session, 1938.

Bengal Tenancy (Second Amendment) Bill, 1938. To amend section 68 of the Bengal Tenancy Act, 1885.

Bengal Rates of Interest Bill, 1938. To reduce the rates of interest payable on certain dues.

Calcutta Official Receivers Bill, 1938. To provide for the administration and control of the Official Receiver of the High Court in Calcutta.

Government Bill introduced on August 17, 1937 and referred to a Select Committee.

Bengal Tanks Improvement Bill, 1937. To provide for the improvement of the tanks in Bengal for irrigation.

Introduced on September 30, 1937 ; referred to Select Committee.

Bengal Maternity Benefit Bill, 1937. To regulate the employment of women in factories for certain periods before and after child-birth and to provide for the payment of maternity benefit to them.

Referred to Select Committee during Feb.—April session, 1938.

Bengal Municipal (Amendment) Bill, 1938. To ensure timely reconstitution of the Municipalities.

Bengal Local Self-Government (Amendment) Bill, 1938. To ensure timely reconstitution of Local and District Boards.

Bengal Village Self-Government (Amendment) Bill, 1938. To remove certain anomalies relating to the election of President and Vice-President of union boards.

Bengal Dentists Bill, 1938. To provide for the registration and control of Dental practitioners in Bengal.

Introduced and circulated to elicit public opinion during Feb.—April session, 1938.

Bengal Tout Bill, 1937. To suppress touts in courts and certain offices in Bengal.

THE PUNJAB ERRATICS

How did the "erratic blocks" come to be scattered over the Punjab ?

A study has lately been made by the Geological Survey of India of this long debated question, and after consideration of the distribution and nature of the occurrence of these blocks, the conclusion has been reached that if, as suggested, a catastrophic flood was responsible for carrying them to their present position, that flood took place before the final dismemberment of the 'Indobrahm', the supposed Tertiary river, which combined the Indus and the Brahmaputra, and is considered to be responsible for the deposit of the fluvial Siwalik series of sands and conglomerates.

The Indus at the time of the supposed flood must have flowed around the Kala Chitta range near Sang Jani and thence along the course of the Soan towards Kalabagh. After the erratics reached their present positions, earth-movements took place, which were responsible for the final dismemberment of the 'Indobrahm' and caused the Indus to separate from the Brahmaputra and to find a new course through the Attock and Kalabagh gorges.

On a comparison of the evidence of past glaciation near the Pir Panjal and in Hazara,

it is obvious, concludes the Survey, that the Pir Panjal must have received its final elevation after the glaciation had occurred. Thus the general statement that there is no evidence of glaciation in the Himalayas or Sub-Himalayas below 5,000 feet is discounted in view of the fact that elevation of these ranges took place after the glaciation.

Glaciers At Low Level

There seems little reason to doubt that glaciers were at a considerably lower level than 5,000 feet in the late Pleistocene times and it is possible that the erratics of the Punjab had an origin associated with these, either from the bursting of a dam caused by the temporary advance of a transverse glacier, or from the breaking off of rock-laden icebergs from the snout of a larger glacier.

Finally, there is the possibility, says the Survey, of part-glacial origin of certain boulder beds in the Siwaliks, as exemplified by the Bain boulder bed, about which the opinion is held that it was derived from the melting of an ice-tongue, which descended from the highlands of Waziristan in the late Pliocene to Pleistocene times.

BIHAR (25-5-38)

1. Sir Maurice Garnier Hallett, K.C.S.I., C.I.E., I.C.S.

Appointed : March 11, 1937.

Retires : March 10, 1942.

Sir Maurice Hallett is on deputation as acting Governor of the United Provinces.

2. Sir Thomas Alexander Stewart, K.C.I.E., C.S.I., I.C.S., is officiating as Governor with effect from May 16, 1938.

3. A. J. Mainwaring, C.I.E., I.C.S.

Appointed : April 1, 1937.

4. (1) Sri Krishna Sinha, Prime Minister and Minister for Home Affairs (Bihari Hindu, Bhumihaar—Congress).

(2) Anugrah Narayan Sinha, Minister for Finance and Local Self-Government (Bihari Hindu, Rajput—Congress).

(3) Dr. Saiyid Mahmud, Minister for Education and Development (Bihari Muhammadan—Congress).

(4) Jaglal Chaudhuri, Minister for Excise and Public Health (Depressed Class, Passi—Congress).

Congress Ministry.

5. (1) Shivanandan Prashad Mandal, M.L.A., Judicial and Jails (Bihari Hindu—Congress).

(2) Krishna Ballabh Sahay, M.L.A., Revenue, Appointment and Political (Bihari Hindu, Kayastha—Congress).

(3) Jagat Narayan Lal, M.L.A., Finance and Commerce (Bihari Hindu, Kayastha—Congress).

(4) Jimut Bahan Sen, M.L.A., Public Works and Irrigation (Bengali Hindu—Congress).

(5) Binodanand Jha, M.L.A., Local Self-Government, Medical and Public Health (Bihari Hindu, Brahman—Congress).

(6) Sarangdhar Sinha, M.L.A., Education including Registration (Bihari Hindu, Rajput—Congress).

(7) Jagjiwan Ram, M.L.A., Development (Depressed Class—Congress).

(8) Sayeedul Haque, M.L.A., Excise (Muhammadan—Congress).

6. Ninety-six.

7. Ten.

8. One hundred and fifty-two.

9. Thirty.

10. (1) Bihar Nationalist Coalition Party : 27 (including 4 members of Muslim League).

(2) Muslim Independent Ahrar Party : 23.

(3) Muslim League Party : 1.

(4) No Party : 4.

11. (1) Bihar Nationalist Coalition Party : 11.

(2) Muslim Independent Party : 2.

(3) No Party : 6.

12. July 20, 1937.

13. The first session of the Bihar Legislative Assembly began on July 22, 1937, and ended on September 27, 1937; the second session began on December 1, and ended on December 23, 1937, and the third session began on March 5, 1938. It is not possible to say how many sessions of the Assembly will normally be held; but three a year are likely.

14. The first session of the Bihar Legislative Council began on July 22, 1937, and ended on September 4, 1937; the second session began on December 10, 1937, and ended on December 23, 1937; the third session began on March 21, 1938. It is not possible to say how many sessions of the Council will normally be held; but three sessions a year are likely.

15. R. E. Russell, C.I.E., I.C.S. March 14, 1938.

16. Patna : 173,948.

Province : 32,371,434.

17. Ranchi : 57,238.

18. Rs. 4,98,41,000.

19. Principal Acts Passed by the Bihar Legislature, 1937-38 :

Title of Act.	Date of Governor's Assent.	Objects.
The Bihar Ministers' Salaries Act, 1937.	September 7, 1937.	Fixes salaries of Ministers (at Rs. 500 a month), as required by sub-section (3) of section 51 of the Government of India Act, 1935.
The Bihar Legislature (Officers' Salaries) Act, 1937.	September 7, 1937.	Fixes salaries of the Speaker and Deputy Speaker of the Assembly and of the President and Deputy President of the Legislative Council (at Rs. 500 and Rs. 250 a month respectively).
The Bihar Legislature (Removal of Disqualifications) Act, 1937.	September 7, 1937.	Declares that the holders of certain offices shall not be disqualified for being chosen as, or for being, members of the Bihar Legislature.
The Bihar Famine Relief Fund (Expenditure) Act, 1937.	December 21, 1937.	Provides that expenditure required to be incurred to maintain the capital of the Bihar Famine Relief Fund shall be charged on the revenues of the province.
The Bihar Entertainments Duty Act, 1937.	December 22, 1937.	Imposes for revenue purposes a duty on all payments for admission to theatres, cinemas and other places of public entertainment.
The Bihar Stamp (Amendment) Act, 1937.	December 22, 1937.	Increases the rates of stamp duty for revenue purposes on certain instruments, etc.
The Bihar Sugar Factories Control Act, 1937.	December 22, 1937.	Provides for the licensing of Sugar factories and regulates the supply and the price of sugar-cane intended for use in such factories.
The Bihar Tenancy (Amendment) Act, 1937.	December 23, 1937.	To mitigate the hardships of tenants caused by some of the provisions of the Bihar Tenancy Act, 1885.
The Bengal Troops Transport and Travellers' Assistance Regulation (Amendment) Act, 1938.	April 12, 1938	Abolishes the power of impressment of transport by civil officers and private travellers when journeying in the mofussil.
The Chota Nagpur Tenancy (Amendment) Act, 1938.	May 9, 1938	To mitigate the hardships of tenants caused by some of the provisions of the Chota Nagpur Tenancy Act, 1908.

20. Principal Government Bills Introduced :

Title of Bill.	Objects.
The Bihar Money-Lenders Bill, 1937	To regulate money-lending transactions and to grant relief to debtors in the province.
The Bihar Agricultural Income-tax Bill, 1937.	To obtain additional revenue by taxing agriculture income.
The Bihar Prohibition Bill, 1938 ..	To introduce in certain selected areas of the province prohibition of the manufacture, sale and consumption of liquors and intoxicating drugs and to extend this prohibition to other areas of the province on the basis of experience gained.
The Bihar Restoration of Bakasht Lands and Reduction of Arrears of Rent Bill, 1938.	To restore to former tenants certain lands sold for arrears of rent during a period of unprecedented fall in prices, and to reduce arrears of rent in certain cases.
The Bihar Tenancy (Amendment) Bill, 1938.	To do away with the right of landlords to take out certificates for recovery of arrears of rent, to abolish transfer fee and to define the rights of raiyats in trees, plantations, etc., and provides for the speedy realisation of rent.

BOMBAY (20-5-38)

1. Sir Lawrence Roger Lumley, G.C.I.E., T.D.

Appointed : September 18, 1937.

Retires : September 17, 1942.

2. Not on leave.

3. Joseph Boyd Irwin, D.S.O., M.C., I.C.S., J.P.

4. (1) Bal Gangadhar Kher, Prime Minister and Minister for Education (Hindu).

(2) Anna Babaji Latthe, Minister for Finance (Hindu).

(3) Kanaiyalal Maneklal Munshi, Minister for Home Department (and Legal) (Hindu).

(4) Dr. Manchersha Dhanjibhoy Gilder, Minister for Health and Excise (Parsi).

(5) Morarji Ranchhodji Desai, Minister for Revenue, Rural Development and Agriculture (Hindu).

(6) Mahomed Yasseen Nurie, Bar.-at-Law, Minister for Public Works (Muhammedan).

(7) Laxman Madhav Patil, Minister for Local Self-Government (Hindu).

All the Ministers belong to the Congress Party.

5. (1) Gulzarilal Nanda, P. S. to the Hon'ble the Prime Minister (Labour) and to the Hon'ble Minister for Excise.

(2) Bhalchandra Maheshwar Gupte, P. S. to the Hon'ble Minister for Home Department and to the Hon'ble Minister for Local Self-Government.

(3) Mrs. Hansa Jivraj Mehta, P. S. to the Hon'ble the Prime Minister (Education) and to the Hon'ble Minister for Health.

(4) Malgouda Pungouda Patil, P. S. to the Hon'ble Minister for Revenue, Rural Development and Agriculture.

(5) Timmappa Rudrappa Nesvi, P. S. to the Hon'ble Minister for Public Works.

(6) Bhaurao Sakhararam Hiray, P. S. to the Hon'ble Minister for Home Department (and Legal).

All the Parliamentary Secretaries are Hindus and belong to the Congress Party.

6. Eighty-eight Congress Party M. L. As.

7. Thirteen. One independent member also usually supports Government.

8. One hundred and seventy-five.

9. Not less than 29 and not more than 30.

<i>Name of Party or Group.</i>	<i>Numerical strength.</i>
10. Muslim League ..	25
Independent Labour Party ..	14
Progress Party ..	12
Peasants' and Peoples Party ..	10
Peasants' and Workers' Party ..	8
Democratic Swaraj Party ..	5
Independents ..	12
Total Non-Congress M. L. As.	86

11. The following members of the Bombay Legislative Council form the opposition :—

(1) Sir Currimbhoy Ebrahim.

(2) Professor Sohrab R. Davar.

(3) N. D. Deodhekar.

(4) Narsingrao S. Desai.

(5) Sardar Rao Bahadur Chandrappa B. Desai.

(6) Dr. K. A. Hamied.

(7) S. C. Joshi.

(8) B. N. Karanjia.

(9) Khan Saheb A. A. Khan.

(10) Dr. G. S. Mahajani.

(11) Khan Saheb Mahomed Ibrahim Makan.

(12) Major Sardar Bhimrao Nagojirao Patankar.

(13) Dr. P. G. Solanki.

(14) Frederick Stones.

(15) Mahomed Amin Wazeer Mahomed Tambe.

(16) M. B. Virkar.

12. July 19, 1937.

13. Formerly two sessions were generally called every year, one in July and the Budget session in February. Under the new Constitution, sessions were called as follows :—

	<i>Date of commencement.</i>	<i>Date of prorogation.</i>
1st Session ..	19-7-37	23-9-37
2nd Session ..	10-1-38	5-2-38
3rd Session ..	25-2-38	7-5-38

14. Formerly two sessions were generally called every year, one in July and the Budget session in February. Under the new Constitution, sessions were called as follows :—

	<i>Date of commencement.</i>	<i>Date of prorogation.</i>
1st Session ..	20-7-37	24-9-37
2nd Session ..	12-1-38	5-2-38
3rd Session ..	5-3-38	7-5-38

15. Sir Gilbert Wiles, K.C.I.E., C.S.I., I.C.S., January 3, 1938.

16. Bombay City : 1,161,383.

Province : 17,992,053.

17. Poona (from June to October) : 256,003.

18. Rs. 12,21,11,000.

19. Principal Acts Passed by the Bombay Legislature, 1937-38 :

Title of Act.	Date of Publication in the B. G. G.	Objects.
Bombay Legislature Members (Removal of Disqualifications) Act, 1937 (Bom. I of 1937).	October 18, 1937.	To specify offices of profit under the Crown in India which will not disqualify their holders from being chosen as, or, for being members of the Provincial Legislature.
Bombay Legislative Council (President and Deputy President) and the Bombay Legislative Assembly (Speaker and Deputy Speaker) Salaries Act, 1937 (Bom. II of 1937).	October 22, 1937.	To determine the salaries of the President and Deputy President of the Bombay Legislative Council and the Speaker and Deputy Speaker of the Bombay Legislative Assembly.
Bombay Legislature Members' Salaries and Allowances Act, 1937 (Bom. III of 1937).	October 23, 1937.	To provide for the salaries and allowances of members of both the Chambers of the Legislature.
Bombay Ministers' Salaries Act, 1937 (Bom. IV of 1937).	October 28, 1937.	To determine the salaries of Ministers.
Bombay Local Boards (Amendment) Act, 1938 (Bom. I of 1938).	January 28, 1938.	To abolish nominations in the case of all local boards and to reserve seats in joint electorates for members of backward classes, minorities and women. It also gives an option to the Muhammadan voters in any Muhammadan constituency in a District to declare that the said separate Muhammadan constituency be abolished in which case they would get representation by means of reserve seats in joint electorates.
Bombay Provisional Collection of Taxes Act, 1938 (Bom. IV of 1938).	February 3, 1938.	To provide that in cases in which Government make a declaration to that effect, the tax proposed in the Bill shall become leviable from the day on which the Bill is published.
Bombay Tobacco (Amendment) Act, 1938 (Bom. VI of 1938).	March, 24, 1938.	Amends two Acts, namely : (1) the Tobacco Duty (Town of Bombay) Act, 1857, and (2) The Bombay (District) Tobacco Act, 1933. The object of amendments in the first Act is to increase the licence fees in the City of Bombay in accordance with the quality of the tobacco. The amendments in the Bombay (District) Tobacco Act are designed to make the Act permanent and to shift the main burden of the licence fees generally from the retailer to the wholesale dealer.
Bombay Finance (Amendment) Act, 1938 (Bom. VII of 1938).	March 26, 1938.	The Bombay Finance Act of 1932 containing provisions for the imposition of an electricity duty and for varying fees under the Court Fees Act and the duties under the Indian Stamp Act, is continued for one more year.
Bombay Small Holders Relief Act, 1938 (Bom. VIII of 1938).	March 31, 1938.	To postpone the execution of decrees passed against small agriculturists upto April 1, 1939 by which time it is hoped to pass legislation for the relief of agricultural indebtedness and the regulation of tenancies.

20. Principal Government Bills Introduced :

Title of Bill.	Objects.
Bombay Probation of Offenders Bill, 1938 (Bill No. III of 1938).	To enlarge the provisions of section 562 of the Criminal Procedure Code for the release on probation of offenders and to provide particularly for the supervision of certain offenders by a probation officer named by the Court.
Bombay Harijan Temple Worship (Removal of Disabilities) Bill, 1938 (Bill No. V of 1938).	To remove all legal difficulties in the way of those trustees of public temples, who are convinced of the justice of the claim of Harijans to make use of Hindu public temples and who desire to throw open the temples to the Harijans under their control.
Bombay Money-lenders Bill, 1938 (Bill No. VII of 1938).	To regulate and control money-lending business.
Bombay Medical Practitioners' Bill, 1938 (L. A. Bill No. X of 1938).	To provide for the registration of persons who practise Ayurvedic and Unani systems of medicine and to protect the public from the activities of uneducated and half-educated quacks of all systems.
Bombay District Municipal and Municipal Boroughs (Amendment) Bill, 1938 (L. A. Bill No. XI of 1938).	To abolish nominations in the case of all municipal boards and to give representation by means of reservation of seats in joint electorates to members of backward classes, minorities and women. Also to give an option to the Muhammadan voters of any municipality to declare that separate Muhammadan constituencies should be abolished in which case they would get representation by reservation of seats in general constituencies.
Bombay Special (Emergency) Powers (Repeal) Bill, 1938 (L. A. Bill No. XII of 1938).	To repeal the Bombay Special (Emergency) Powers Act, 1932.
Bombay Primary Education (Amendment) Bill, 1938 (L. A. Bill No. XV of 1938).	To remove certain difficulties experienced in the working of the Bombay Primary Education Act, 1923. The important change made by the Bill is that the power of appointing administrative officers of School Boards and inspecting staff will in future vest in Government. It also provides for the establishment of a Provincial Board of Education to advise Government in all matters connected with Primary Education.
City of Bombay Municipal (Third Amendment) Bill, 1938 (L. A. Bill No. XVII of 1938).	To effect — (a) Abolition of nominations ; (b) Introduction of adult franchise for elections of 1942 and thereafter ; (c) Redistribution of wards.
Bombay Race-Courses Licensing (Amendment) Bill, 1938 (L. A. Bill No. XVIII of 1938).	To make it clear that the conditions which Government may impose under the existing Bombay Race-Courses Licensing Act, 1912, may provide for the payment of a licence fee to Government and for such other matters, directly or indirectly, connected with racing or not, as Government may deem fit.
City of Bombay Police (Amendment) Bill, 1938 (Bill No. XIX of 1938).	To enable the Commissioner of Police to direct any person to remove himself from the City of Bombay, if in the opinion of the Commissioner his presence, movements or acts, is or are causing or are calculated to cause danger or alarm, or a reasonable suspicion exists that unlawful designs are entertained by such person.

CENTRAL PROVINCES AND BERAR (20-5-38)

1. Sir Francis Verner Wylie, K.C.S.I., C.I.E., I.C.S.

Appointed : May 27, 1938.

2. Not on leave.

3. Rabindranath Banerjee, M.A. (Cal.), B.A. (Cantab.), I.C.S.

NOTE :—The Ministry has since resigned. For reported new Ministry, see Stop Press News on page 52. (Ed.)

4. (1) Dr. Narayan Bhaskar Khare, B.A., M.D. (Maratha—Brahmin—Congress Party).

(2) Pandit Ravi Shankar Shukla, B.A., LL.B. (Kanyakubja—Brahmin—Congress Party).

(3) Pandit Dwarka Prasad Misra, B.A., LL.B. (Kanyakubja—Brahmin—Congress Party).

(4) Ramrao Madhaorao Deshmukh, Bar-at-Law (Maratha—non-Brahmin—Congress Party).

(5) Mohammad Yusuf Shareef, M.A., LL.B. (Mohammedan—Congress Party).

(6) Durgashankar Kripashankar Mehta, B.A., LL.B. (Khedawal—Brahmin—Congress Party).

(7) Purushottam Balwant Gole, B.A., LL.B. (Maratha—Brahmin—Congress Party).

5. No Parliamentary Secretaries.

6. Seventy-one members of the Congress Party.

7. No Upper House.

8. One hundred and twelve.

9. No Upper House.

10. Independent Party—19.

United Party—15.

11. No Upper House.

12. July 14, 1937.

13. (1) February-March.

(2) The last week of July and the first two weeks of September.

(3) The third week of November and first week of December.

14. No Upper House.

15. Chandulal Madhavlal Trivedi, B.A., C.I.E., O.B.E., I.C.S. October 24, 1937.

16. Nagpur : 215,165, Province : 17,990,937.

17. Pachmarhi : 6,136.

18. Rs. 4,81,87,000.

19. Principal Acts Passed by the Central Provinces and Berar Legislature, 1937-38 :

Title of Act.	Date of publication in the local official Gazette.	Objects.
The Central Provinces and Berar Offices of Profit (Removal of Disqualifications) Act, 1937 (I of 1937).	August 27, 1937.	Declares the offices which shall not disqualify the holders thereof for being chosen as and for being members of the Assembly of this province.
The Central Provinces and Berar Legislative Assembly Committee Summons Enforcement Act, 1937 (II of 1937).	October 8, 1937.	Prescribes a penalty for persons who refuse to give evidence or produce documents before a Committee of the Provincial Legislature.
The Central Provinces and Berar Police (Amendment) Act, 1937 (III of 1937).	October 15, 1937.	Provides for the appointment of honorary police officers; such officers can perform useful functions under the Prevention of Cruelty to Animals Act and similar Acts.
The Central Provinces and Berar Payment of Salaries Act, 1937 (IV of 1937).	November 1, 1937.	Provides for the salaries and allowances of Ministers, the Speaker and the Deputy Speaker, Parliamentary Secretaries and members of the Provincial Legislature.
The Central Provinces Tenancy (Amendment) Act, 1938 (III of 1938).	January 28, 1938.	Empowers Revenue Officers to penalize the levy of <i>begar</i> by landlords.
The Central Provinces and Berar Committees of Inquiry (Evidence) Act, 1938 (V of 1938).	February 4, 1938.	Provides for the appointment of committees to enquire into matters of public importance and the taking of evidence by such committees.
The Central Provinces and Berar Prohibition Act, 1938 (VII of 1938).	March 25, 1938.	Introduces and extends the prohibition of the manufacture, sale and consumption of liquor.
The Central Provinces Reduction of Interest (Amendment) Act, 1938 (X of 1938).	April 29, 1938.	Aims chiefly at reducing rates of interest.
The Central Provinces and Berar Finance Act, 1938 (XIII of 1938).	May 13, 1938.	Aims at augmenting the financial resources of the Province by the imposition of a tax on trades, professions, callings and employments.

20. Principal Government Bills Introduced :

Title of Bill.	Objects.
The Berar Land Revenue Code (Amendment) Bill, 1937 (44 of 1937).	Where an occupant abandons cultivation and the holding lies waste, the Bill provides that Government may enter on the land and treat it as though unoccupied.
*The Central Provinces and Berar Indian Contract (Amendment) 1937 (45 of 1937).	To empower courts to set aside champertous agreements.
*The Central Provinces and Berar Sales of Motor Spirit and Lubricants Taxation Bill, 1938 (1 of 1938).	To levy a tax on retail sales of motor spirit and lubricants.
*The Central Provinces Revision of the Land Revenue of Estates Bill, 1938 (4 of 1938).	To enlarge the financial resources of the province by re-adjusting the relations of the state and the zamindar or jagirdar on a basis more equitable to the general tax-payer.
*The Central Provinces and Berar Temporary Postponement of Execution of Decrees Bill, 1938 (8 of 1938).	To provide for the temporary postponement of execution of certain decrees of civil courts against agriculturists. This legislation is proposed for giving temporary relief to agriculturists pending further legislation on the subject.
The Central Provinces and Berar Prisons (Amendment) Bill, 1938 (9 of 1938).	To provide for separate treatment of political prisoners.
The Central Provinces and Berar Relief of Indebtedness Bill, 1938 (10 of 1938).	To make provision for the relief of indebtedness of agriculturists by scaling down debts.

*The Bill has been passed by the Assembly. Assent thereto is awaited.

INDIAN TEA LICENSING COMMITTEE

Section 3 (2) of the Indian Tea Control Act, 1938, requires that within three months after the commencement of the Act (which came into force on April 1, 1938), the Central Government shall publish the names of *all* members of the Indian Tea Licensing Committee, and thereupon the Committee shall be deemed to be constituted. The Committee is to consist of 14 members, of whom 10 are to be nominated by bodies mentioned in section 3 (1) (a), (c) and (d) of the Act, and 4 are to be elected by tea estates mentioned in section 3 (1) (b), (e) and (f) in accordance with rules to be prescribed for the purpose.

As regards the 4 members to be elected, therefore, it became necessary first to obtain the views of the Provincial Governments and through them of the various bodies concerned as to the method of election, then to frame rules, and finally to hold the elections and publish the names of those elected before July

1, 1938, by which date the Committee had to be completely constituted. This proved to be impracticable within the prescribed time.

The position now is that the Electoral Rules are ready in their final form and will shortly be published, but the holding of elections under the rules by tea estates or gardens widely distributed in various parts of India will require further time.

In these circumstances and in view of the mandatory provisions of section 3 (2) of the Act requiring the publication of names of *all* members of the Committee, the Central Government have, in respect of the 4 members referred to, and after consultation with the Provincial Governments concerned, exercised the power of nomination under section 4 (1) of the Act and the names of all members of the Committee were notified in a Gazette of India Extraordinary on June 30, 1938.

These nominations have, however, been made on condition that members so nominated will resign as soon as elections can be held.

MADRAS (23-5-38)

1. John Francis Ashley, Lord Erskine, G.C.I.E.

Appointed : November 15, 1934.

Retires : November 14, 1939.

Lord Erskine was on leave from June 18, 1936 to October 1, 1936.

2. Not on leave.

3. Thomas George Rutherford, C.I.E., I.C.S.

4. (1) C. Rajagopalachariar, Prime Minister in charge of the Public and Finance Departments (Brahmin).

(2) T. Prakasam, Minister in charge of the Revenue Department (Brahmin).

(3) Yakub Hasan, Minister in charge of the Public Works Department (Muhammadan).

(4) Dr. Subbarayan, Minister in charge of the Education and Legal Department (Vellala—Konga—Brahmo).

(5) Dr. T. S. S. Rajan, Minister in charge of the Public Health Department (Brahmin).

(6) V. I. Muniswami Pillai, Minister in charge of the Agriculture and Rural Development Department (Scheduled Caste).

(7) V. V. Giri, Minister in charge of the Industries and Labour Department (Brahmin).

(8) S. Ramanathan, Minister in charge of the Administration Reports and Public Information Department (Non-Brahmin—Vellala).

(9) K. Raman Menon, Minister in charge of the Courts and Prisons Department (Non-Brahmin—Nayar).

(10) B. Gopala Reddi, Minister in charge of the Local Administration Department (Non-Brahmin—Reddy).

All Ministers belong to the Congress Party.

5. (1) M. R. Ry. Ayyadevara Kaleswara Rao Garu, Parliamentary Secretary to the Prime Minister (Brahmin).

(2) M. R. Ry. A. Viswanadham Garu, Parliamentary Secretary to the Minister for Revenue (Brahmin).

(3) M. R. Ry. C. J. Varkey Avl., Parliamentary Secretary to the Minister for Education and Legal (Indian Christian).

(4) M. R. Ry. A. Balakrishna Shetty Avl., Parliamentary Secretary to the Minister for Public Health (Non-Brahmin—Bant).

(5) M. R. Ry. N. S. Varadachariar Avl., Parliamentary Secretary to the Minister for Agriculture and Rural Development (Brahmin).

(6) M. R. Ry. B. S. Murti Garu, Parliamentary Secretary to the Minister for Industries and Labour (Scheduled Caste).

(7) M. R. Ry. Maganti Bapineedu Garu, Parliamentary Secretary to the Minister for Administration Reports and Public Information (Non-Brahmin—Kamma).

(8) Ahmad Thambi Muhammad Mohideen Maricair Sahib Bahadur, Parliamentary Secretary to the Minister for Courts and Prisons (Muhammadan).

(9) M. R. Ry. M. Bhaktavatsala Mudaliyar Avl., Parliamentary Secretary to the Minister for Local Administration Department (Non-Brahmin—Vellala).

All belong to the Congress Party.

NOTE.—The office of Parliamentary Secretary to the Minister for Public Works is at present vacant, the previous incumbent M. R. Ry. K. R. Karant Avl., having resigned, with effect from the forenoon of May 9, 1938.

6. One hundred and sixty-two.

7. Twenty-seven. In addition two Independent members generally support the Ministry.

8. Two hundred and fifteen.

9. According to the Table of Seats in the Fifth Schedule to the Government of India Act, 1935, the maximum number of seats in the Madras Legislative Council is 56 and the minimum 54, of which not more than 10 and not less than 8 are to be filled by the Governor by nomination. The number of seats so far filled by nomination is 9.

Name of Party or Group.		Strength.
10. Justice Party ..	..	17
Muslim League ..	..	13
European Group ..	..	7
Anglo-Indian Group ..	..	2
Independents who do not belong to any party and who are independent of each other ..	..	13
		52
11. Justice Party ..	..	7
Muslim Group ..	..	4
Independents ..	..	16
		27

12. July 14, 1937.

13. & 14. Before Part III of the Government of India Act, 1935, came into force, the session of the Legislature usually began in August and ended after the close of the Budget meeting in March. Since Provincial Autonomy, there have however been two sessions in one year. The

dates on which the two Chambers of the Legislature met during these two sessions are given below :—

1st Session.

Assembly.		Council.	
From	To	From	To
14-7-1937	15-7-1937	14-7-1937	15-7-1937
31-8-1937	4-9-1937	31-8-1937	1-9-1937
14-9-1937	1-10-1937	6-9-1937	10-9-1937
		27-9-1937	30-9-1937

2nd Session.

20-12-1937	21-12-1937	21-12-1937	..
27-1-1938	1-2-1938	31-1-1938	2-2-1938
1-3-1938	5-3-1938	1-3-1938	2-3-1938
14-3-1938	30-3-1938	7-3-1938	9-3-1938
..	..	22-3-1938	25-3-1938
..	..	31-3-1938	..

Owing to the rush of legislative business, the Council and the Assembly sat rather frequently and even at short notice during the year 1937-38. That being the first year under the Reformed Constitution, the dates on which the Chambers met cannot be regarded as the *normal* dates of meetings. Until at least another year elapses, it will not be possible to say what the normal dates are.

15. C. F. Brackenbury, C.S.I., I.C.S.*

Date of substantive appointment as Chief Secretary, March 19, 1935.

16. Madras City : 647,230.

Province : 46,740,107 according to the Census of 1931.

Estimated present population consequent on the transfer of certain portions of the Presidency to Orissa : 44,124,671.

17. Till recently, Ootacamund (population : 24,616) was the summer Capital. The question whether the seasonal transfer of the seat of the Government to Ootacamund for 3 months during summer should be continued or not was considered by the Government this year and it was decided—

(i) that the Ministers and the Secretariat staff as a whole should in future remain in Madras, and

(ii) that the Chief Secretary and the other Secretaries to Government may, for reasons of health, be permitted to spend a period of about 2 months during the hot weather of 1938 at Ootacamund, with minimum personal staff.

18. Rs. 15,98,21,000.

*Now on leave—(Ed.).

19. Principal Acts Passed by the Madras Legislature, 1937-38 :

Title of Act.	Date of Publication in Fort St. George Gazette.	Objects.
1. The Madras Payment of Salaries and Removal of Disqualifications Act, 1937 (Madras Act IX of 1937).	September 21, 1937.	Fixes the salaries and allowances of the Ministers, Speaker and Deputy Speaker, President, and Deputy President, Parliamentary Secretaries and members of the Legislature and removes certain disqualifications.
2. The Madras Prohibition Act, 1937 (Madras Act X of 1937).	October 1, 1937.	Provides for the introduction and extension of the prohibition of the manufacture, sale and consumption of intoxicating liquors and drugs in the Province of Madras.
3. The Madras Local Boards (Amendment) Act, 1937 (Madras Act XI of 1937).	October 5, 1937.	Cancels the nominations already made to local boards and secures representation for the minority communities and women by means of co-option by the elected members of the district board concerned.
4. The Madras Regulation of the Sale of Cloth Act, 1937 (Madras Act XII of 1937).	October 12, 1937.	Makes a licence necessary to carry on trade in cloth. Dealers selling exclusively handloom products are granted licences without any fee but all the others are to pay a fee.
5. The Madras State Aid to Industries (Amendment) Act 1937, (Madras Act XIII of 1937). *	October 12, 1937.	Enlarges the scope of the principal Act to permit of giving subsidies for any purpose to cottage industries and of such assistance to village industries as may be found necessary from time to time.

19. Principal Acts Passed by the Madras Legislature, 1937-38—*contd.*

Title of Act.	Date of publication in Fort St. George Gazette.	Objects.
6. The Madras City Municipal, District Municipalities and Local Boards (Amendment) Act, 1938 (Madras Act II of 1938).	February 15, 1938.	Provides for the adoption of the relevant portions of the electoral rolls prepared for the Madras Legislative Assembly as the electoral rolls for local bodies in the Province thus widely extending the franchise for such bodies.
7. The Madras Agriculturists Relief Act, 1938 (Madras Act IV of 1938).	March 22, 1938.	To give relief to indebted agriculturists by scaling down their debts and relieving them from the burden of old arrears of rent without encouraging default in payment of current dues. It also fixes a reasonable rate of interest for loans contracted after its commencement.
8. The Madras Traffic Control Act, 1938 (Madras Act V of 1938).	March 29, 1938.	To unify the control of road traffic in the Province and to remove the distinction for taxation purposes between motor lorries plying for hire, motor lorries used for trade purposes and other motor lorries.
9. The Madras Tolls and Motor Vehicles Taxation (Amendment) Act, 1938 (Madras Act VI of 1938).	April 19, 1938.	To amend the Indian Tolls Act, 1851, so as to give power to Government to levy tolls where a bridge is constructed or repaired at the expense exclusively of a local body or bodies or partly of a local body or bodies and partly of the Government.
10. The Madras Suppression of Immoral Traffic (Amendment) Act, 1938 (Madras Act VII of 1938).	May 3, 1938.	To make living on the earnings of prostitution an offence. The mother and children of a prostitute will not however be liable to punishment unless they are proved to have aided, abetted or compelled her prostitution.

20. Principal Government Bills Introduced :

None pending.

WIRELESS OVER THE WIRES

“CARRIER” SYSTEM: NEW LINKS

An order is being placed by the Posts and Telegraphs Department for the establishment of the “Carrier” current system of telephonic communication between Madras and Trichinopoly (239 miles) and between Madras and Jalarpet (137 miles). New power plants are to be erected at Trichinopoly and Jalarpet while the existing power plant will be used at Madras.

By using the “Carrier” system more than one channel of communication can be provided between two stations without the necessity of erecting extra wires. These channels are constituted by electric waves of certain definite high frequencies which are transmitted from, and received by, both stations, and which travel along the pair of wires connecting the stations. They are distinct from each other, being of different frequencies, and no interference can take place between them, nor with speech on the voice frequency wire. To all intents and

purposes they are separate channels by which telephone conversations or telegraph messages are transmitted.

Cheap And Invisible

The cost of installing “Carrier” channels on long lines is much less than that of erecting separate pairs of wires. The Department, therefore, by using “Carrier” currents, saves both in initial outlay and consequent expenditure towards maintenance and inspection while channels using this system are less liable to interruption from natural sources.

The first “Carrier” system was installed in 1932 between Bombay and Calcutta. Since then other similar systems have been established between Bombay and Madras, Bombay and Delhi, and Delhi and Lahore. It is also intended to instal “Carrier” systems between Delhi and Calcutta, and Bombay and Karachi by the end of next year, and between Calcutta and Madras during the current year.

NORTH-WEST FRONTIER PROVINCE (23-5-38)

1. Sir George Cunningham, K.C.S.I.,
K.C.I.E., O.B.E.

Appointed : March 2, 1937.

2. Not on leave.

3. Captain Arthur John Dring.

4. (1) Dr. Khan Sahib, L.R.C.P., M.R.C.S.,
Chief Minister (Muslim—Congress).

(2) Lala Bhanju Ram Gandhi, B.A., LL.B.,
Minister, Finance (Hindu—Congress).

(3) Kazi Attaullah Khan, B.A., LL.B.,
Minister, Education (Muslim—Congress).

(4) Khan Mohd. Abbas Khan, Minister, In-
dustries (Muslim—Democrat).

Congress Ministry.

5. Parliamentary Secretaries have not been
appointed.

6. In a House of 48 (the Honourable Speaker
and one member of Democrat Party who has
recently been unseated, being excluded) the
strength of Government's supporters is 36,
made up of :—

(1) Congress : 22.

(2) Democrats : 3 A bye-election pends in
a fourth seat.

(3) Hindu-Sikh Independents : 2.

(4) Muslim Independents : 3.

(5) Central Party : 6.

7. No Upper House.

8. Fifty.

9. No Upper House.

10. (1) Muslim Party : 8.

(2) Hindu-Sikh Nationalist Party : 4.

11. No Upper House.

12. September 7, 1937.

13. Autumn session ; first week of Nov-
ember.

Budget session ; first week of March.

14. No Upper House.

15. A. D. F. Dundas, C.I.E., I.C.S.

Appointed : October 18, 1937.

16. Peshawar.

Population : See opposite column.

17. No Summer Capital.

[In thousands
of
rupees.]

Rs.

18. Revenue account .. 1,80,05

Debt and Deposit head
transactions .. 1,38,18

Total Provincial Receipts .. 3,18,23

District, Agency, etc.				Total population.
North-West Frontier Province				2,528,165
Districts	..	..	..	1,315,818
1. Hazara	..	..	..	358,193
2. Peshawar	..	..	..	538,146
3. Kohat	..	..	..	126,210
4. Bannu	..	..	..	145,163
5. Dera Ismail Khan	..	..	..	148,106
Agencies and Tribal areas—				
Total	..	..	..	1,212,347
Enumerated	..	..	..	44,635
Estimated	..	..	..	1,167,712
1. Malakand (Dir, Swat and Chitral)—				
Total	..	..	..	465,470
Enumerated	..	..	..	2,928
Estimated	..	..	..	462,542
2. Khyber—				
Total	..	..	..	147,908
Enumerated	..	..	..	16,452
Estimated	..	..	..	131,456
3. Kurram—				
Total	..	..	..	35,395
Enumerated	..	..	..	3,682
Estimated	..	..	..	31,713
4. North Waziristan—				
Total	..	..	..	56,325
Enumerated	..	..	..	13,154
Estimated	..	..	..	43,171
5. South Waziristan—				
Total	..	..	..	61,264
Enumerated	..	..	..	6,711
Estimated	..	..	..	54,553
Tribal area under the political control of the Deputy Commissioner of :—				
1. Hazara—				
Total	..	..	..	190,036
Enumerated	..	..	..	..
Estimated	..	..	..	190,036
2. Peshawar—				
Total	..	..	..	162,510
Enumerated	..	..	..	..
Estimated	..	..	..	162,510
3. Kohat—				
Total	..	..	..	70,200
Enumerated	..	..	..	..
Estimated	..	..	..	70,200
4. Bannu—				
Total	..	..	..	11,916
Enumerated	..	..	..	..
Estimated	..	..	..	11,916
5. Dera Ismail Khan—				
Total	..	..	..	11,323
Enumerated	..	..	..	1,708
Estimated	..	..	..	9,615

19. Principal Acts Passed by the N.-W. F. P. Legislature, 1937-38 :

Title of Act.	Date of passage.	Objects.
OFFICIAL.		
The N.-W. F. P. Legislative Assembly (Removal of Disqualification) Act.	September 22, 1937.	To enable part-time Government servants, such as Lambardars and Inamdars, to stand for election and save from disqualification persons appointed as Parliamentary Secretaries.
The N.-W. F. P. Ministers' Salaries Act.	September 22, 1937.	To fix the salaries of Ministers under section 51, Government of India, Act.
The N.-W. F. P. Legislative Assembly (Speaker's and Deputy Speaker's Salaries) Act.	September 22, 1937.	To fix the salaries of Speaker and Deputy Speaker under section 65, Government of India Act.
The N.-W. F. P. Entertainment Duty Act.	September 22, 1937.	To tax entertainments by levy of duty on tickets for admission.
Criminal Procedure (Election Offences) N.-W. F. P. Amendment Act.	March 2, 1938	To so amend the Code of Criminal Procedure as to make the offence of personation at elections cognizable.
The N.-W. F. P. Contempt of Courts Act.	March 2, 1938	To confer necessary power and authority on the Court of the Judicial Commissioners N.-W. F. Province to punish contempt of Court.
The N.-W. F. P. Courts Regulation Act.	March 2, 1938	To make it possible for any two judges of the Commissioners to constitute a Bench.
The N.-W. F. P. Tobacco Vend Fees Act.	March 2, 1938	To enable Government to levy vend fees on the sale of manufactured tobacco in Municipalities, Notified Areas, Small Towns, Cantonments and on Railway Stations.
The N.-W. F. P. Public Utility Services Act.	March 2, 1938	To enable Government to assume temporary control of a public utility service so as to prevent inconvenience to the public owing to a refusal of a public utility company to continue its functions.
The N.-W. F. P. Prohibition Act.	March 18, 1938	To improve the moral condition and material prosperity of the people by bringing about prohibition of the production, manufacture, etc., of intoxicating liquors and drugs.
PRIVATE.		
The N.-W. F. P. Muslim Waqf Act.	March 10, 1938	To provide for the better governance and administration of certain classes of waqfs and the supervision of Mutawali's management of them.
The Punjab Municipal (N.-W. F. P. Amendment) Act.	March 3, 1938	To abolish the system of nomination on Municipalities; to confer upon them the right of electing Presidents and to remove the provision as regards Oath of Allegiance.
The Punjab District Board (N.-W. F. P.) Act.	March 3, 1938	To abolish the system of nomination on District Boards, to confer upon them the right of electing Presidents and to remove the provision as regards Oath of Allegiance.
The Teri Dues Regulation Act..	March 5, 1938	To repeal Teri Dues Regulation No. IV of 1902 in order to stop the realisation of these dues by the Khan of Teri.
The N.-W. F. P. Repealing and Amending Act.	March 3, 1938	To repeal certain repressive laws in force in the N.-W. F. Province.

20. Principal Government Bills Introduced :

Title of Bill.	Objects.
OFFICIAL.	
The N.-W. F. P. Agriculturists' Debtors Relief Bill.	To protect the agriculturists and give them relief from the heavy burden of indebtedness.
PRIVATE.	
The N.-W. F. P. Primary Education Bill ..	To introduce free and compulsory primary education in the N.-W. F. Province.

INTERNATIONAL LABOUR CONFERENCE DECISIONS

Details are available of the action which the Government of India propose to take in respect of the Draft Conventions and Recommendations adopted by the International Labour Conference at its Twenty-Third Session.

The Government of India do not think that international co-operation is essential to effective action in respect of advance planning of public works, but are prepared to examine in consultation with the Provincial Governments, the possibility of co-operating in the work of the International Committee provided for in the Public Works (International Co-operation) Recommendation, 1937, on the basis of the plan prepared by the International Committee which began its sittings at the end of last month. But as regards the Public Works (National Planning) Recommendation, 1937, which contemplates administrative rather than legislative action, the Government of India propose to forward it to Provincial Governments.

Minimum Employment Age

The possibility of ratifying the Minimum Age (Industry) Convention (Revised), 1937, is under examination. A Bill has been prepared to give effect to its provisions in respect of railways and docks and will probably be introduced at this session. In the case of the Minimum Age (Non-Industrial Employment) Convention (Revised), 1937, no action is proposed, though the Convention has been forwarded to Provincial Governments for consideration. The Government of India do not consider that all-India legislation on the comprehensive lines of the Convention is called for in existing conditions in India, and are of opinion that young children employed in small power factories and workshops not at present subject to regulation have a prior claim to protection. The possibility of legislating for this purpose is under consideration.

No action is considered necessary on the Minimum Age (Family Undertakings) Recommendation, 1937, as the Indian Laws do not

contain special provisions for family undertakings.

As for the Reduction of Hours of Work (Textile) Convention, 1937, the Government of India do not propose to take any action.

Safety In Building

With regard to the Safety Provisions (Building) Convention, 1937, and the Safety Provisions (Building), the Inspection (Building), the Co-operation in Accident Prevention (Building), and the Vocational Education (Building) Recommendations, 1937, a resolution was adopted by the Council of State and the Legislative Assembly on March 2 and 25, 1938, respectively, recommending to the Governor General in Council that provincial Governments be consulted regarding the desirability and practicability of legislation to secure greater safety for workers in the building industry and that the attention of Provincial Governments be drawn to the Recommendations concerning co-operation in accident prevention and vocational education. A communication on these lines has already been sent to the Provincial Governments.

Irrigation Problems

(Continued From Page 29.)

during the current year and valuable suggestions were made for the co-ordination of work, and for the improvement of methods to be adopted in investigations.

The question of a central research station for the study of the application of irrigation water to crops and soils was discussed and the conclusion reached that the study of basic problems common to all Provinces in India could best be undertaken by the Imperial Agricultural Research Institute at New Delhi. The Committee considered that, for this, Irrigation Officers should be deputed to a special section directed by an Irrigation Officer, which would ensure the co-operation, so essential in the investigation of joint problems, of agricultural and irrigation officers.

The next meeting of the Central Board of Irrigation, to be held in Delhi, will take place from October 29, to November 4.

ORISSA (21-5-38)

1. Sir John Austen Hubback, K.C.S.I., I.C.S. (on leave for 4 months, from August 10, 1938).

Appointed : April 1, 1936.

Retires : March 31, 1941.

2. Acting Governor : G. T. Boag, C.S.I., C.I.E., I.C.S. (From August 10).

3. John Bowstead, M.C., I.C.S.

4. (1) Biswanath Das (Hindu).

(2) Nityananda Kanungo (Hindu).

(3) Bodhram Dube (Hindu).

Political Party—Congress.

5. (1) Jagannath Misra (Hindu).

(2) Radha Krishna Biswasroy (Hindu).

(3) Raj Krishna Bose (Hindu).

(4) Jadumani Mangaraj (Hindu).

Party—Congress.

6. Thirty-seven Members.

7. No Upper House.

8. Sixty.

9. No Upper House.

10. Twenty-three Members.

11. No Upper House.

12. July 19, 1937.

13. Sessions have been held as below :—

1st Session—July 28, 1937 to September 28, 1937.

2nd Session—January 24, 1938 to May 5, 1938.

14. No Upper House.

15. P. T. Mansfield, C.I.E., I.C.S. (on leave).

Date of appointment : April 1, 1936.

E. R. Wood, M.C., J.P., I.C.S. (Officiating).

Date of appointment : March 17, 1938.

16. It has been decided to build the Capital at Cuttack-Chowdwar ; until this is completed all offices are located in Cuttack. His Excellency the Governor resides at Puri.

Cuttack : 1,087,991.

Province : 7,740,841.

17. None.

18. Rs. 1,92,08,000.

19. Principal Acts Passed by the Orissa Legislature :

Title of Act.	Objects.
The Orissa General Clauses Act, 1937. (Orissa Act I of 1937).	To facilitate the interpretation of the Orissa Acts and to shorten the language used therein.
The Madras Estates Land (Orissa Amendment) Act, 1937. (Orissa Act II of 1937).	To protect the occupancy rights of ryots in whole Inam villages in the districts of Ganjam and Koraput, till the main Bill is passed. (Till April 1, 1938).
The Orissa Ministers' Salaries Act, 1937. (Orissa Act III of 1937).	To provide for the salaries of Ministers of the Government of Orissa.
The Orissa Legislative Assembly Speaker's and Deputy Speaker's Salaries Act, 1937. (Orissa Act IV of 1937).	To provide for the salaries of the Speaker and the Deputy Speaker of the Orissa Legislative Assembly.
The Orissa Offices of Profit (Removal of Disqualification) Act, 1937. (Orissa Act V of 1937).	To provide for the removal of certain disqualifications for election to the Orissa Legislative Assembly.
The Agriculturists' Loans (Orissa Amendment) Act, 1937. (Orissa Act VI of 1937).	To enable the Provincial Government to make rules as to loans to be made for relief of the distress and 'indebtedness' of agriculturists.
The Bihar and Orissa Public Safety (Orissa Repeal) Act, 1937. (Orissa Act I of 1938).	To repeal the Bihar and Orissa Public Safety Act, 1933.
The Orissa Legislative Assembly Members' Salaries and Allowances Act, 1938. (Orissa Act II of 1938).	To provide for the salaries and allowances of members of the Orissa Legislative Assembly.
The Orissa Co-operative Land Mortgage Bank Act, 1938. (Orissa Act III of 1938).	To facilitate the working of a Land Mortgage Bank in the Province of Orissa and thus provide for the grant of long term loans to proprietors of estates and owners of land and immovable property, for agricultural improvements, etc.
The Madras Estates Land (Orissa Amendment) Act, 1938. (Orissa Act IV of 1938).	To extend the period of protection of the occupancy right of ryots in whole Inam villages in the Districts of Ganjam and Koraput up to April 1, 1939.

20. Principal Government Bills Introduced :

Title of Bill.	Objects.
The Madras Estates Land (Orissa Amendment) Bill, 1937.	To give relief to the ryots in proprietary areas, by making it incumbent on the revenue officers settling rent in proprietary areas to have regard to the rents or rates of rent prevailing in the ryotwari area, and limiting the rents accordingly.
The Orissa Tenancy Amendment Bill, 1937.	To establish the right of tenants to the produce of the land, to provide for the inheritance and transfer by sale, gift or otherwise of all rights of occupancy subject to certain conditions.
The Orissa Nurses and Midwives Registration Bill, 1938.	To provide for the registration and better training of nurses, health visitors, midwives and dais, thus minimising the dangers incurred by ministrations of unqualified persons.
The Orissa Small Holders Relief Bill, 1938.	To protect the peasant proprietors and agricultural tenants and small holders against eviction from their lands and the attachment and sale of their moveable property.
The Legal Practitioners' (Orissa Amendment) Bill, 1938.	To enable Mukhtars to practise in Civil and Criminal Courts in <i>ex-Madras</i> and <i>ex-Central Provinces</i> areas as in other parts of Orissa.

EDUCATION IN BALUCHISTAN

INCREASED RECURRING EXPENDITURE

Further details are now available of the reorganisation of education decided upon by the Government of India to spread literacy in Baluchistan.

Besides the establishment of an Intermediate College at Quetta and the provision of a Central Anglo-Vernacular Middle School, the decision has been taken to set up at Pishin a residential rural primary school as an experimental measure, and if the experiment proves a success, to establish similar schools at other suitable centres to replace the existing one-teacher primary village schools.

Of the other measures to which it is proposed to give effect during the year mention may be made of the following :—

- (1) Provincialisation of schools hitherto maintained by the Bazar Funds and the Municipal Committee of Quetta ;
- (2) Improvement of schools in semi-urban areas ;
- (3) Suitable provision of scholarships ;
- (4) Better provision for the training of teachers and institution of refresher courses ;
- (5) Revision of the Baluchistan Education Code ; and

- (6) Conversion of the post of Assistant Inspector of Schools into that of District Inspector and the appointment, for a period of two years in the first instance, of two Additional District Inspectors, to secure better supervision and control.

It is estimated that on the completion of the scheme, the total recurring educational expenditure in Baluchistan will be about Rs. 4,24,000 per annum, as against the pre-earthquake figure of Rs. 3,19,000. Out of this, about Rs. 80,000 per annum will be recovered from the Bazar Funds and the Quetta Municipality.

Because of the necessity for economy, owing to the financial outlook for the year, the additional non-recurring expenditure this year will not exceed Rs. 25,000. The question of providing further funds for non-recurring expenditure in subsequent years will, however, be considered in due course.

STOP PRESS

C. P. Ministry (See page 43)

According to newspaper reports to hand as we go to press, the Government has been composed as follows :—

Pandit Shukla, Premier.—General Administration, Police and Jails.

Mr. D. P. Misra.—Local Self-Government, Medical, Public Health and Publicity.

Mr. D. K. Mehta.—Finance and Law.

Mr. C. J. Bharuka.—Commerce and Industry.

Mr. S. V. Gokhale.—Education.

PUNJAB (22-7-38)

1. Sir Henry Duffield Craik, Bart., K.C.S.I., I.C.S.

Appointed : April 7, 1938.

Retires : No period of appointment was mentioned in the Royal Commission appointing the Governor, but it is understood that the appointment was for six months and that Sir Herbert William Emerson would return for a further two years' term.

2. ———

3. E. P. Moon, I.C.S.

4. (1) Khan Bahadur Major Sirdar Sir Sikandar Hyat Khan, K.B.E., Premier (Muslim—Unionist).

(2) Sardar Bahadur Dr. Sardar Sir Sunder Singh Majithia, Kt., C.I.E., D.O.L., Minister of Revenue (Sikh, Khalsa—National).

(3) Rao Bahadur Chaudhri Sir Chhotu Ram, B.A., LL.B., Minister of Development (Hindu—Unionist).

(4) Manohar Lal, M.A., Bar-at-Law, Finance Minister (Hindu—National Progressive).

(5) Honorary Major Nawabzada Malik Khizar Hayat Khan Tiwana, O.B.E., Minister of Public Works (Muslim—Unionist).

(6) Mian Abdul Haye, Minister of Education (Muslim—Unionist).

Unionist Ministry.

NOTE.—The Unionist Party commands an absolute majority in the Legislature (100 in a total House of 174 excluding the Speaker). Since (1) the non-Unionist Ministers are the choice of the Unionist Leader and (2) have agreed to carry out the Unionist Party's programme and since (3) the Ministry as a whole depends for its majority entirely on the Unionist Party, it is essentially the Ministry of a single party.

The choice of two Ministers from outside the ranks of the Unionist Party was intended to give special representation in the Ministry to the Hindu and Sikh minorities. It has also secured to the Ministry the general, though not invariable, support of two parties, the National Progressive (composed of 12 Hindu members) and the Khalsa National Party (composed of 16 Sikh members) from which the two non-Unionist Ministers were drawn. The members of these two parties have agreed generally to accept the whip of the Ministry, but there have been occasions when they have voted against specific proposals of the Ministry, leaving it to the Unionist Party to provide the necessary majority in support of the proposals concerned. The Ministry is thus essentially Unionist in its political complexion though it is not exclusively Unionist in its personnel.

5. (1) Khan Bahadur Mian Ahmad Yar Khan Daultana, Parliamentary Secretary, Political and Chief Official Whip (Muslim—Unionist).

(2) Mir Maqbool Mahmood, Parliamentary Secretary General (Muslim—Unionist).

(3) Sardar Bahadur Sardar Ujjal Singh, M.A., Parliamentary Secretary, Home (Sikh, Khalsa—National).

(4) Mrs. Jahan Ara Shah Nawaz, M.B.E., Parliamentary Secretary, Education, Medical Relief and Public Health (Muslim—Unionist).

(5) Raja Ghazanfar Ali Khan, Parliamentary Secretary, Revenue and Irrigation (Muslim Unionist).

(6) Chaudhri Tika Ram, B.A., LL.B., Parliamentary Secretary, Development (Hindu—Unionist).

(7) Thakur Ripudaman Singh, B.A., Parliamentary, Secretary, Finance (Hindu—National Progressive).

(8) Shaikh Faiz Muhammad, B.A., LL.B., M.B.E., Parliamentary Secretary, Local Government and Public Works (Muslim—Unionist).

6 to 11. There is no Upper House in the Punjab.

The total number of seats in the Legislative Assembly is 175.

Excluding the Speaker, the Honourable Chaudhri Sir Shahab-ud-Din, who was elected to the Assembly on the ticket of the Unionist Party, but who since his election has ceased to belong to any party, the total number of members is 174.

They are divided at present into parties as follows :—

Government supporters :—

Unionist Party	..	100
Khalsa National Party	..	16
National Progressive Party	..	12
Muslim League	..	2
		<hr/>
		130

Opposition :—

Congress Party including 10 Sikh members who were elected on the ticket of the Akali Party but have since joined the Congress Party and agreed to accept its whip	..	39
Ahrar Party	..	3
Independent Members	..	2
		<hr/>
		44

12. April 1, 1937.

13. The dates are approximately in the case of the Budget Session from middle of February to middle of April, and for Summer Session from middle of June to middle of July. No dates for the autumn session have yet been determined.

14. No Upper House.

15. J. D. Penny, C.I.E., I.C.S.

May 4, 1937.

16. Lahore : 4,29,747.

17. Simla : 18,144.

18. Rs. 11,72,15,000.

19. Principal Acts Passed by the Punjab Legislature, 1937-38 :

Title of Act.	Date Passed.	Objects.
A.—Acts which have received the assent of the Governor General of India in Council.		
Punjab Ministers' Salaries Act ..	April 8, 1937	Determines the salaries of the Ministers.
Punjab Legislative Assembly Speaker's and Deputy Speaker's Salaries Act.	April 12, 1937	Determines the salaries of the Speaker and the Deputy Speaker of the Punjab Legislative Assembly.
Punjab Legislative Assembly (Removal of Disqualifications) Act.	July 15, 1937	Provides that the holders of certain offices, <i>e.g.</i> , Parliamentary and Private Parliamentary Secretaries, Zaildars, Sufaidposhes, etc., shall not be disqualified for election to the Punjab Legislative Assembly.
Punjab Legislative Assembly (Allowances of Members) Act.	July 15, 1937	Determines the allowances to be paid to the members of the Punjab Legislative Assembly.
Punjab Alienation of Land (Amendment) Act.	April 11, 1938	To prohibit agricultural land being put to destructive use by a mortgagee or lessee without the consent of the owner, and to remove the ambiguity regarding the period for which temporary alienation of land belonging to a statutory agriculturist judgment-debtor can be ordered by a civil court.
Suits Valuation (Punjab Amendment) Act.	March 10, 1938	To amend the Suits Valuation Act, 1887, in so far as it deals with complaints or memorials of appeals in suits by reversioners under the Punjab Customary Law for a declaration in respect of an alienation of ancestral land.
B.—Acts passed to which the Assent of the Governor and Governor General of India is awaited.		
Punjab Debtors' Protection (Amendment) Bill.	June 21, 1938	To prohibit execution by the appointment of a receiver to administer property which is protected from attachment or sale under the Colonisation of Government Lands (Punjab) Act, 1912.
Punjab Registration of Money-lenders Bill.	July 16, 1938	To establish effective control on the business of money-lending by compelling money-lenders to obtain licences.
Punjab Alienation of Land (Second Amendment) Bill.	July 16, 1938	To nullify certain sales and mortgages of land which were effected in contravention of the intention of the Punjab Alienation of Land Act of 1900.
Punjab Restitution of Mortgaged Lands Bill.	July 21, 1938	To terminate old mortgages of land (effected before 1901 and still subsisting) on payment of a reasonable compensation where necessary by the mortgagor to the mortgagee.
Punjab Alienation of Land (Third Amendment) Bill.	July 22, 1938	To place the agriculturist money-lenders for the purposes of the Punjab Alienation of Land Act, in the same position as non-agriculturist money-lenders and check them from permanently alienating the land of their agriculturist debtors.

20. Principal Government Bills Introduced :

Title of Bill.	Objects.
Punjab Motor Traffic Offences Bill ..	To expedite the trial of motor offences and to provide that persons accused of minor traffic offences need not appear in court in person or by pleader unless they wish to do so.
Punjab Primary Education Bill ..	To provide for primary education and compulsory attendance of children at primary schools.
Punjab Electricity Bill	To explain and amplify section (7) of the Indian Electricity Act, 1910, in its application to the Punjab and to give the Punjab Government the powers of a licensee when it engages in the business of supplying electrical energy.
Punjab Suppression of Mischievous and Defamatory Statements Bill.	To penalise the publication of false and alarming statements and authorising Government to prosecute a person for defaming a public servant.
Punjab Agricultural Produce Markets Bill.	To provide for better regulation of the purchase and sale of agricultural produce and to establish markets for agricultural produce in the Punjab.

WORLD FAMOUS ARCHAEOLOGIST FOR INDIA

EXCAVATING SUMERIAN SECRETS

The extensive excavations carried out by the Archaeological Survey of India at Mohenjodaro, Harappa and other places have revealed the existence of a wide-spread ancient civilization similar in many respects to the Sumerian civilization of the Near East with which it had established contacts.

In order to provide for fruitful co-operation in this particular field of exploration between archaeologists in India and archaeologists working in the Near East, it appeared desirable to the Government of India that the Archaeological Survey of India should have the benefit of the services of some eminent archaeologist who had worked on Sumerian exploration in Iraq and other countries of the Near East. They have accordingly invited Sir Leonard Woolley to spend next winter in India.

Sir Leonard who has accepted the invitation will arrive in India by the end of October and stay in the country till the middle of January. During this period he will visit Mohenjodaro and Harappa, Chanhudaro and Amri, Taxila

and Sarnath, Nalanda and Paharpur and other centres of archaeological activity in Northern and Southern India.

Best Use Of Limited Funds

This will enable officers of the Archaeological Survey of India to exchange views with him concerning the technique of exploration. Advantage will also be taken of Sir Leonard's visit to utilise his vast experience of exploration for the purpose of suggesting sites which promise the best results from intensive exploration. In a country of the size and archaeological wealth of India, selective exploration is essential in order to derive the maximum benefit from the limited funds that are likely to be available for expenditure on this kind of activity.

Sir Leonard Woolley is one of the most eminent living British Archaeologists and his qualifications for the work before him are well known.

His achievements in the Near East culminating in his notable work at Ur have focussed upon him the attention of archaeologists throughout the world. He has recently been engaged on an exploratory survey in North-West Syria with a view to obtaining links between the Mesopotamian and Cretan cultures; he will continue this work after his visit to India.

SIND (10-6-38)

1. Sir Lancelot Graham, K.C.S.I., K.C.I.E., I.C.S.

Appointed : April 1, 1936.

2. Not on leave.

3. John Madan Corin, B.A. (Cantab.), I.C.S.

4. (1) Khan Bahadur Allah Bakhsh Haji Mahommad Umar, O.B.E., Chief Minister in charge of Finance, Home, General, Legal and Political and Miscellaneous Departments (Muhammadan—Sind United Party).

(2) Pir Illahi Bakhsh Nawazalishah, M.A., LL.B., Minister in charge, Revenue Department (Muhammadan—Sind United Party).

(3) Nichaldas V. Vazirani, Minister in charge, Public Works Department, Public Health and Medical Departments (Hindu—Independent).

5. None appointed.

6. Sind United Party .. 18

Congress Group 9

Hindu Independent Party .. 11

European Group .. 3

Independent .. 1

Labour .. 1

43

One seat is vacant. This has been excluded.

7. No Upper House.

8. Sixty (one is the Speaker's seat and one is vacant).

9. No Upper House.

10. Democratic Party 13

Others 2

15

11. No Upper House.

12. March 21, 1938.

13. Sessions are held when necessary. The Budget Session is held in February-March.

14. No Upper House.

15. C. B. B. Clee, C.I.E., I.C.S.

Appointed : June 1, 1938.

16. Karachi City : 2,47,791.

Province : 38,87,070.

17. No separate Summer Capital.

18. Budget revenue estimated at Rs. 3,60,67,000, exclusive of the probable receipts on account of Sind's share of Income-Tax from the Government of India for the current year, which amounted to Rs. 2,50,000 in 1937-38.

19. Principal Acts Passed by the Sind Legislature, 1937-38 :

Title of Act.	Date.	Objects.
The Sind Ministers' Salaries Act, 1938.	June 4, 1938	To reduce the salaries of Ministers and to bring their salaries and allowances on a level with those in some other provinces.
The Sind Legislative Assembly Members' Salaries and Allowances Act, 1938.	June 4, 1938	To provide for salaries and allowances of members of the Sind Legislative Assembly.
The Bombay District Municipal, Local Boards and Municipal Boroughs (Sind Amendment) Act, 1938.	June 4, 1938	To abolish nominations to local authorities constituted under the Acts, to District and Borough Municipalities and to Local Boards and Notified Area Committees.

None.—The City of Karachi Municipal (Second Amendment) Act, 1938 (abolishing nominations to the Municipal Corporation of Karachi) and the Bombay Primary Education (Sind Amendment) Act, 1938 (abolishing nominations to School Boards) which were passed by the Assembly have not yet received the assent of His Excellency the Governor.

20. Principal Government Bills Introduced :

None pending.

UNITED PROVINCES (23-5-38)

1. Sir Harry Graham Haig, M.A., K.C.S.I., C.I.E., I.C.S.

Appointed : December 6, 1934.

Retires : December 6, 1939. (On leave for four months from May 17, 1938.)

2. Acting Governor : Sir Maurice Garnier Hallett, K.C.S.I., C.I.E. (From May 17 to September 16, 1938.)

3. J. C. Donaldson, M.C., I.C.S.

4. (1) Pt. Govind Ballabh Pant, B.A., LL.B., Premier and Minister of Home Affairs and Finance (Hindu).

(2) Mr. Rafi Ahmad Kidwai, Minister of Revenue and Jails (Muslim).

(3) Dr. Kailash Nath Katju, M.A., LL.D., Minister of Development, Justice and Agriculture (Hindu).

(4) Mrs. Vijaya Lakshmi Pandit, Minister of Local Self-Government and Health (Hindu).

(5) Sri Sampurnanand, B.Sc., Minister of Education (Hindu).

(6) Hafiz Muhammad Ibrahim, B.A., LL.B., Minister of Communications and Irrigation, (Muslim).

Congress Ministry.

5. Pandit V. N. Tewari, M.A., M.L.A. (Hindu).

M. Muhammad Suleman Ansari, M.A., LL.B., M.L.A. (Muslim).

Dr. Mahmud Ullah Jang, Bar.-at-Law, M.L.C. (Muslim).

The three foregoing are attached to the Premier.

Thakur Hukum Singh, B.A., M.L.A. (Hindu).

Ajit Prasad Jain, M.A., LL.B., M.L.A. (Hindu).

Sri Gopi Nath Srivastava (Hindu).

The three foregoing are attached to the Minister of Revenue.

Acharya Jugal Kishore, M.A. (Oxon.), M.L.A. (Hindu—Attached to the Minister of Justice).

Chaudhri Behari Lal, M.L.A. (Depressed Class—Attached to the Minister of Justice).

Atma Ram Govind Kher, B.A., LL.B., M.L.A. (Hindu—Attached to the Minister of Local Self-Government).

Sri Karan Singh Kane, B.A., M.L.A. (Depressed Class—Attached to the Minister of Education).

Sri Lakshmi Narain, B.A., M.L.C. (Hindu—Attached to the Minister of Communications).

6. One hundred and forty-eight ; all belong to the Congress Party.

7. The Congress (or the Government) Party consists of 13 members. Support from other parties—Nationalists 23 and No Party 24,—is always uncertain.

8. Two hundred and twenty-eight.

9. Sixty.

10. Independent Party : 31.

Muslim League Party : 29.

No Party : 20. (They usually side with the Opposition).

11. Nationalist : 23.

No Party : 24.

12. July 17, 1937.

13. The first session of the Assembly began on July 29, 1937, and lasted to October 5, 1937. The second session began on January 17, 1938, and its meetings were adjourned *sine die* on April 27, 1938. This being only the second year of the Legislative Assembly, normal dates on which it is likely to meet every year cannot be stated.

14. This depends on the volume and urgency of Government business. The Upper House has so far met as follows :

July 29 to August 3, 1937.

September 3 to 11, 1937.

September 29 to October 6, 1937.

October 21 to 23, 1937.

January 27, 1938 to February 7, 1938.

March 2 to 8, 1938.

May 6 to—.

15. C. W. Gwynne, C.S.I., C.I.E., O.B.E., I.C.S.

Date of appointment : December 5, 1936. (On leave from March 2, 1938.)

Acting Chief Secretary : Panna Lal, M.A., B.Sc., LL.B. (Cantab.), Bar.-at-Law, I.C.S., from March 2, 1938.

16. Allahabad : 183,914.

Province : 48,408,763.

17. Naini Tal : 10,673. But the Government have stopped the hill exodus from this year.

18. Rs. 13,01,70,000.

19. Principal Acts Passed by the United Provinces Legislature, 1937-38 :

Title of Act.	Date on which passed by Legislative Assembly.	Date on which passed by Legislative Council.	Objects.
United Provinces Ministers' Salaries Act, 1937 (No. I of 1937).	August 2, 1937	August 3, 1937.	To comply with the provision of section 51 (3) of the Government of India Act, 1935.
United Provinces Parliamentary Secretaries (Removal of Disqualification) Act, 1937 (No. II of 1937).	August 2, 1937	August 3, 1937.	To remove the disqualification imposed by section 69 (1) (a) of the Government of India Act, 1935.
United Provinces Stay of Proceedings (Revenue Courts) Act, 1937 (No. IV of 1937).	September 7, 1937.	September 11, 1937.	To provide (1) for the stay of proceedings in all original suits for arrears of rent prior to Rabi 1344 Fasli, and (2) for saving of limitation in cases which but for this Act, would have been filed.
United Provinces Legislature (Officers' Salaries) Act, 1937 (No. V of 1937).	August 2, 1937	October 6, 1937.	To comply with the provisions of sections 65 (4) and (5) of the Government of India Act, 1935.
United Provinces Entertainments and Betting Tax Act, 1937 (No. VIII of 1937).	September 28, 1937.	October 5, 1937.	To impose a small tax on amusements and betting.
The Temporary Postponement of Execution of Decrees Act, 1937 (No. X of 1937).	October 5, 1937	October 23, 1937.	To provide for temporary postponement of the executions of certain decrees against agriculturists.
United Provinces Sugar Factories Control Act, 1938 (No. I of 1938).	January 29, 1938 (Reconsidered and passed on February 7, 1938).	February 7, 1938.	To provide for the licensing of sugar factories and for regulating the supply of sugar-cane intended for use in such factories and the price at which it may be purchased and for such other matters as may be incidental thereto.

20. Principal Government Bills Introduced :

Title of Bill.	Objects.
United Provinces Maternity Benefit Bill, 1938.	To regulate the employment of women in factories for some time after confinement and to provide for the payment of maternity benefit to them.
United Provinces <i>Melas</i> Bill, 1938 ..	To provide for the proper regulation of <i>melas</i> other than those held under the authority of local boards.

20. Principal Government Bills Introduced—*contd.*

Title of Bill.	Objects.
United Provinces Trade Disputes Bill, 1938.	To provide for the prevention and settlement of trade disputes and to promote close contact between employers and employees.
United Provinces Borstal Bill, 1938 ..	To provide for the establishment and regulation of Borstal institutions in the United Provinces and for the detention and training of adolescent offenders therein.
United Provinces First Offenders' Probation Bill.	To amend and consolidate the law relating to release on probation of first offenders in certain cases and to provide for other matters incidental thereto.
United Provinces Prisoners' Release on Probation Bill.	To provide for the conditional release from prison of good conduct prisoners in certain cases before the completion of the terms of imprisonment to which they have been sentenced.
United Provinces Legislative Chambers (Members' Emoluments) Bill, 1938.	To fix the salaries and allowances of members of the United Provinces Legislative Chambers.
United Provinces Tenancy Bill, 1938..	To consolidate and amend the law relating to agricultural tenancies and other matters connected therewith in Agra and Oudh, on a uniform basis.

A SMUGGLER'S LIFE IS NOT A HAPPY ONE

"All quiet on the smuggling front" is the latest report from the East coast. For the first time since the anti-smuggling campaign was launched in November, 1936, the claim is now made that the situation is thoroughly in hand.

Major seizures during the first fortnight of June were few and from all sides reports have come of enforced quiescence or frustration on the part of smugglers.

Enquiries show that prices of silk in Madras and in areas served by that port are such as to give no cause for anxiety. Small quantities of smuggled goods, no doubt, filter through from time to time, but such quantities are both individually and collectively small. The large scale smuggling of "the bad old times" to distant places appears to be practically dead.

After the Karikal land frontier had been successfully blocked, frantic efforts were made by the smugglers to get their goods away by sea. A sharp watch was kept in and around the Madras beaches with the assistance of composite levies hastily called into service from the Madras Salt Depot and the Customs staff, and there is little doubt that no consignment of any significance could be landed.

Sea Patrols

That the sea patrols have proved efficacious and are of great importance in controlling smuggling has more than once been demonstrated recently by the fact that as soon as a launch has left its patrol to enter harbour for repair, des-

perate efforts are made to rush consignments through by sea. But fortunately the wind still blows strongly to the North, and it is not possible for the country craft to move out into the sea.

One catamaran which started out from Karikal on June 11, with eighteen bundles of silk is reported to have capsized after proceeding some distance out, losing all its bundles.

With the change in the direction of the wind in later months, it will no doubt be possible for catamarans to move South, but patrols will by then be spread again over the wide and difficult area which lies between Pudokottah and the sea.

Silk Under Hay Doesn't Pay

The only two major cases of smuggling which took place recently were both from the Pondicherry frontier.

On the night of June 2, a consignment of two hundred dozen mechanical lighters, valued at about Rs. 4,000, was captured near Mortandy. On June 5, the Police recovered eight bundles of silk, valued at about Rs. 1,000, in a basket in a bullock cart near Dusi. The basket was one used for carrying manure and was covered with hay.

One hundred and seventy-three minor cases of smuggling were detected on the Pondicherry frontier in the month of May; they covered goods of a net value of about Rs. 1,500, liable to a duty of about Rs. 1,400. Penalties aggregating nearly Rs. 500 were levied and seventeen persons were sentenced in court to terms of imprisonment totalling about two and a half years.

NEXT ASSEMBLY SESSION

GOVERNMENT LEGISLATIVE PROGRAMME

The Motor Vehicles Bill is likely to be the main item in the business to be transacted by the Central Assembly during the next session at Simla. The report of the Select Committee on the Bill will, it is hoped, be presented on the opening day of the session (August 8).

There is also a proposal to refer the Prevention of Cruelty to Animals (Amendment) Bill, which was circulated towards the close of the Delhi session, to a Select Committee early in the session so that the Bill may become law before the session's close.

The Indian Oaths (Amendment) Bill and the Commercial Documents Evidence Bill have already been referred to Select Committees which are likely to meet and present their reports during the course of the Simla session.

The Select Committee on the Import of Drugs Bill, which met during the Delhi session but adjourned, may also be expected to present its report.

A motion will, it is understood, be made for reference to Select Committee of the Indian Patents and Designs (Amendment) Bill which was circulated in the Simla session of 1937.

New Bills

The new Bills which will be introduced and, subject to exigencies of time, proceeded with in the course of the session include Bills to amend the Indian Aircraft Act; to regulate the admission of children to certain industrial employments; further to amend the Indian Tea Cess Act; further to amend the Indian Cotton Cess Act; to declare that certain defences shall not be raised in suits for damages in British India in respect of injuries sustained by workmen, and a Repealing and Amending Bill.

EMIGRATION FROM KARACHI

SKILLED LABOURERS GO ABROAD

The bulk of emigrants registered at Karachi, says the Protector of Emigrants for the Port in his Annual Report for 1937 of the Working in Sind of the Indian Emigration Act, 1922, are recruited by several Sind Work Merchants whose Headquarters are chiefly at Hyderabad (Sind).

Emigrants recruited are mainly from the hinterland of Sind and these on arriving at Karachi find accommodation either with relatives or friends or at a Dharam Sala and return to their homes after registration until such time as they are taken by their recruiting agents to the Port Health Disinfection Station for medical inspection.

Unskilled labourers do not proceed from this port either to Colonies or any other country outside India. The only emigration that took

place was of skilled labourers, who went mainly to Persia, America, Africa, Straits Settlements, Japan, China, Cyprus, Europe, etc., and were chiefly engaged by British Indian firms. Their number during the year was 439 (as against 461 during 1936) of whom 417 went for commercial occupations. The flow of emigration was steady and all the emigrants were males.

The contracts entered into between the emigrants and their employers were in accordance with the terms approved by Government. Care is taken not to allow persons under 17 years of age to emigrate independently.

The number of returned emigrants during the year was 7, all of whom were males.

There were 10 complaints received from the employees and employers during the year, as against 19 last year. Some of them are being enquired into and some have been referred to arbitration.

India's Sugar Industry

(Continued From Page 30.)

basis at Cawnpore for the months of November, 1936, March, June and October, 1937.

As against these fluctuations in the price of Indian sugars, the price of Java sugar in the Indian ports showed a steady increase. The price per maund of Java sugar in the Indian ports ranged between Rs. 9-8-0 to Rs. 11-6-0.

Gur Trade

The net production of gur in India is estimated at 4,481,000 tons as against 4,101,000 tons in the preceding season. The exports of gur during April, 1936, to March, 1937, totalled 5,845 tons as against 4,187 tons last year.

The price showed a general decline till March, 1937. From April onwards a slight all-round improvement was noticed. Table IV shows the average prices of gur per maund for the three months of November, 1936, March and October, 1937, in six important markets of India.

Molasses And Confectionery

The production of molasses in Central Sugar Factories amounted to 414,640 tons against 337,128 tons last season. The quantity obtained in Khandsari concerns was estimated at 100,000 tons as against 125,000 tons last season, whilst the quantity produced in refineries was estimated at 10,600 tons as against 32,600 last year.

There was no import of molasses. Exports of molasses by sea during the period April, 1936, to March, 1937, amounted to 24,000 tons valued at Rs. 4,91,000 as against 1,000 tons valued at Rs. 1,77,600 during the preceding year.

The imports of confectionery, exclusive of jams and jellies, during the official year 1936-37 amounted to 1,860 tons valued at Rs. 22.90 lakhs compared with 1,684 tons valued at Rs. 21.54 lakhs last year. 23,241 lbs. of saccharine valued at Rs. 73,782 were imported as against 91,141 lbs. valued at Rs. 3,81,548 last year.

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Indian Information Series

VOL. III

Simla, August 15, 1938

No. 14

CONTENTS

	Page		Page
Iraq's Holy Places	61	New Light On Muslim History	78
Land Of The Head-Hunters	63	Practical Botany	78
Natal Labour Conditions	64	Airmail To Australia—Time Table	79
Help For The Ryot	65	South Indian History	80
Historical Records Commission	66	Book Packets By Express Delivery	80
Industries Under The Microscope	67	Injuries To Workmen	81
Copper Plate 1,500 Years Old	68	Government Stores Buy Indian Goods	81
How Much Jute Does The World Want ?	69	Frontier Sentinel	82
Mr. Hore-Belisha On Army Officers' Pay	71	Burma Tin Tungsten	82
New Paper Making Process	72	Indian Recruits In 1937	82
The Empire's Scientific Life	73	Press Telegrams	83
Keeping The Army Fit	74	Pre-Historic Burial Grounds	83
What Would Mulvaney Have Said ?	75	Making Young India Air-Minded	83
India's Credit	75	Relic Of The Buddha	84
Developing New Delhi	75	States And Paramount Power	84
Money In Soap-Suds	76	Anti-Tuberculosis Fund	85
XB Engines	77	Federal Public Service Commission	87
Juvenile Mine Employment	77		

IRAQ'S HOLY PLACES

Helping Pilgrims On Their Way

GREATER SECURITY: BETTER MEDICAL AID

Bagdad British Consulate's Pilgrimage Report

Five thousand six-hundred and sixteen Indian pilgrims visited Iraq in 1937, compared with 4,186 in 1936, says the Report on the work of the Indian Section of the British Consulate at Bagdad, just published.

Golden minarets gleaming for miles across the desert, blue and gold tiled domes under which lie the remains of pious Caliphs, Imams and Sufis of Islam—these are the holy places which attract Muslims from all over India to Iraq.

At Karbala rest the martyrs of the House of the prophet, massacred, parched and thirsty. At Najaf is Ali, the Lion of Islam, the fourth Caliph; Bagdad holds the tomb of the greatest of Muslim mystics, Abdul Qadir Jilani.

Iraq is also being increasingly used as a route by Muslim pilgrims to Mecca every year. It enables them to visit Bagdad, Karbala and Najaf, as they proceed by the cross-country bus service to Damascus in Syria and to Jerusalem. Thence they go to Medina and Mecca.

Indian Gift To Karbala

The untold treasures of the famous Shrine of Karbala where Hussain, the grandson of the Prophet, is buried, have now been further enhanced by the piety of the Borah com-

munity, says the Report. The Zarih (screen) on the tomb has been replaced by a new one, an exact replica, made of 250 tolas of gold and 1,000 tolas of silver; it is an interesting piece of Indian art.

Medical aid, furnishing information about the Iraqi Residence Law's requirements, thus saving pilgrims difficulties with the Iraqi authorities, instructions about passports, inoculations, banking and even about motor buses, are but a few of the innumerable ways described in the Report by which the British Consulate at Bagdad helps the pilgrims on their way.

The increased number of pilgrims from India is attributed to the improved economic conditions that prevailed in India during the year.

Bombay, with 1,800, and the United Provinces with 1,100, sent more than half the total number of pilgrims; 4,196 travelled by sea, landing at Basra, 1,005 by overland route *via* Syria; and 415 by overland route *via* Iran.

Public security throughout Iraq is good, the highways are patrolled by mounted police, and there is now little danger from bandits.

Medical Aid

The British Consulate, with the co-operation of the Iraqi authorities, obtained medical aid for pilgrims who fell sick; and made arrangements for the admission of serious cases to hospital.

Only eight pilgrims (including 3 women) died, against 14 in 1936.

The Iraqi health authorities have made steady progress with their programme of expansion of medical facilities. Two new health centres were opened during the year, one at Karbala and another between Karbala and Najaf, for the benefit of pilgrims who take this route. The opening of medical institutions in outlying districts throughout the country, for which doctors have already been engaged from Egypt and Syria, is planned.

All Consular and Passport authorities have received instructions that travellers to Iraq should be strongly advised to be inoculated against the enteric group of fevers with two doses of triple vaccine (T.A.B.), and reinoculated against smallpox.

Iraq has passed various regulations to improve sanitary conditions in public baths and hotels, and their strict enforcement has considerably improved hygienic conditions in the Holy City.

Town planning schemes in Karbala and Najaf were continued during the year. The town of Najaf presents a greatly improved appearance following the recent extensions carried out beyond the limits of the surrounding wall, which had to be demolished at places to enable the extensions to be effected.

Cheap Transport Plentiful

Motor transport was plentiful in the Holy Cities throughout the year, rates are moderate and no complaints were made by pilgrims.

The authorities are considering the introduction of a modern bus service in Bagdad and its suburbs under official auspices.

There are already about 3,000 miles of roads in Iraq, but the Government has extensive plans for road-improvement throughout the country which will afford better communication between the larger towns.

The extension work on the railway line from Baiji to Mosul was continued.

Exchange And Banking Facilities

Indian currency was convertible at about 75½ *fil*s to the rupee and the exchange was more favourable than in 1936 at 75¾ *fil*s to the rupee.

Bankers in Karbala and Najaf were willing to cash drafts for Indian pilgrims on nominal commission, thus obviating the considerable inconvenience of a special visit to Bagdad for this purpose.

Outside Iran, *i.e.*, in Iraq and neighbouring countries, Iranian currency was obtainable at 80 to 100 *tomans* per 100 rupees, whereas within Iran territory the official rate of 60 *tomans* per hundred rupees is in force. Visitors carrying more than 20 *tomans* when travelling in Iran are liable to lose the excess amount by confiscation by the Iran Government.

The Syrian currency was also cheaper throughout the year.

Pilgrim Routes

More pilgrims travelled to Iraq *via* Iran than in the previous year.

There were no quarantine regulations on travellers to Iran during the year.

Pilgrims intending to travel *via* Iran are advised not to carry dutiable goods if they wish to avoid the customs duty levied by the Iranian Government.

About 50 pilgrims proceeded from Iraq to Saudi Arabia *via* Syria, but a greater number used this route for the return journey. Pilgrims are not allowed to pass through Palestine, but have to embark at Beirut for Jidda. There is, however, no objection to the pilgrims returning *via* Palestine.

Don't Forget A Visa

Many pilgrims left India for Iraq without obtaining the Iraqi Visa, which is essential in addition to the Pilgrim Pass. At Basra, the Iraqi police authorities gave such persons an emergency Visa, valid only for a single journey to Iraq. The Iraqi Visa, current for one year and valid for any number of journeys into Iraq, is obtainable from the Iraqi Consul at Bombay or from the Sind Government at Karachi, and intending pilgrims are advised to obtain it before undertaking the journey, in order to avoid subsequent difficulties.

Destitute Pilgrims Repatriated

The British Consulates at Bagdad and Basra during the year spent 346,800 Iraqi Dinars (A Dinar equals a Pound) on the repatriation of destitute British Indians and British Protected Persons: of this, I. D. 291,525 was spent on 93 British Indian destitutes. In addition, the Pilgrims Officer was able to arrange for a number of destitute persons to be repatriated to India from funds obtained from sources other than Government of India funds, such as contributions from well-to-do pilgrims. The causes of destitution were insufficient provision of funds beforehand, sickness, failure to obtain employment in Iraq, losses by theft, extravagance, etc.

IN THE LAND OF THE HEAD-HUNTERS

Through Uncharted Regions

HOW MUCH DOES THE EARTH PULL ?

Survey Of India's Geodetic Operations

" From this hill the detachment were spectators at a distance of a head-hunting raid in the Namphuk Valley, in which thirty-seven heads were reported to have been taken ".

This extract is not from an adventure story but from the Survey of India's Geodetic Report for 1937, just published.

The raid occurred in the ' no man's land ' on the borders between Assam and Burma, where the quest for scientific data had taken a party of the Survey of India.

Derived from the Greek *γη δαίειν*, meaning " to divide the earth " , the word " geodesy " is applied to the process of providing, as the basis of all surveys and mapping, an accurate framework of stations whose latitudes, longitudes and heights have been determined. It has happened, by chance, that the processes of geodesy also provide data for the study of the constitution of the earth's crust below the comparatively shallow level which can be studied by the geologist. The geophysical aspect of geodesy has therefore acquired an importance comparable with that of its original purpose.

With its headquarters at Dehra Dun, the Geodetic Branch of the Survey of India carries on field work in all parts of India and Burma.

Through Uncharted Regions

Triangulation observations, begun during the preceding year, took the party into uncharted regions in the Naga Hills. Chinese mules were used throughout for transport, except in the Naga tribal territory where no mule tracks exist. A permanent coolie corps of 70 Rangpang Nagas was employed, supplemented by casually recruited local Nagas.

For the initial march elephants were employed in addition to mules. Some use was also made of the waterways of the area. The escort and its kit were transported on rafts and country boats some distance down the Chindwin river.

From the high and densely forested Sangpan Range in Naga tribal territory the line of observation was taken southwards over low-lying swamps south of the Tanai Hka to the Kachin highlands of the Irrawaddy-Chindwin divide. These highlands form a wooded plateau between 3,000 and 6,000 feet high and intersected by deep ravines carrying fast streams draining for the most part into Uyu and Chindwin rivers.

Famous Jade Mines

In them are located the famous Uyu Jade Mines, which were re-opened this year and

attracted numbers of Chinese prospectors from Yunnan.

South of the Jade Mines the tableland breaks up into wide valleys and ranges of hills. The valleys contain many Shan villages, especially around the great Indawgyi Lake. Elephants are numerous here, and this year many were trapped and sent to Assam *via* the Hukawng Valley.

The lowest observation station was established in isolated and densely wooded country on the edge of the Laisai Tract and Singkaling Hkamti State, in the Chindwin Valley.

The Kachins of the highlands are a cheerful people and appear prosperous in contrast to their sullen and backward relatives in the Hukawng Valley to the north-east.

Naga coolies were used by the observing detachment for the ascent of Lungwukaw Bum, but for all other stations Kachins were locally enlisted for the final climb.

Observations were much hindered at Lungwukaw Bum by cloud, and 14 days on this hill were necessary. From this hill the detachment were spectators at a distance of a head-hunting raid in the Namphuk Valley, in which 37 heads were reported to have been taken.

Low clouds and mist seem to remain in the Hukawng and Taro Valleys throughout the cold weather, and observations had to be completed under difficult conditions.

The march southwards in the uninhabited and densely forested Taro Valley was made along a path made a year or two ago for another expedition. This was the most exacting march of the season, but after this, routes though circuitous, were never difficult.

For telescopic observation to hills 30 to 60 miles distant, *Argand* lamps with 15-inch parabolic reflectors were used at all stations. These lamps have been little modified in design since their introduction in India by

Colonel Everest in 1836. Their bulk and fragility increase transport difficulties in rough and mountainous country, but the Survey of India hope to introduce electric beacons in their place in the course of the next few seasons.

Has Baluchistan Risen ?

Another activity of the Geodetic Branch of the Survey of India is the process of levelling for the determination of heights. Levelling operations in Sind and Baluchistan suggest that between Sukkur and Sibi there has been an apparent sinkage of up to about 8 inches. This sinkage may not have been real (as levelling in this type of country has proved inaccurate in the past) but a little north-west of Sibi there has been a sudden rise of one and a half feet and the position of the change exactly at the outer edge of the hills suggests that it may be real.

Investigations were continued further and the conclusion reached that a belt about 10 miles wide at the bottom end of the Bolan pass has very probably risen one and a half feet since 1913-14; that from Bibi Nani onwards the general level is unchanged, but that changes of 6 inches may have occurred; and that at Quetta itself the Murree brewery rock-cut bench-mark has probably risen one foot relative to the other bench-marks.

Tide Predictions

An important part of the activities of the Geodetic Branch is the prediction of tides. Predictions were made for 41 ports in the Indian Ocean. Registrations with automatic gauges were continued by the Port authorities at Aden, Karachi, Bombay, Vizagapatam, Dublat, Calcutta and Rangoon. Daylight observations on tide-poles were also continued at Bhavnagar, Chittagong and Akyab. The Tide-tables for the Indian Ocean and for Bombay, the Hooghly River and the Rangoon River were prepared as usual and published in advance. Advance predictions for 1938 also for a number of ports were sent in October—December 1936, on the usual exchange basis, to the Hydrographic Departments in England, the United States and Japan for inclusion in their tide-tables.

Observations of the intensity of gravity—one of the more purely scientific branches of geodesy—were made at 47 stations, of which 26 were in Assam, 17 in Bengal, 3 in Bihar and 1 in the United Provinces. In places slight increases in the strength of the earth's pull revealed the presence of abnormal areas in the earth's crust, while in other places, as a result of the studies, deficiencies of density are revealed. Another means of securing knowledge of these peculiarities of the earth's structure lies in the study of a surface known to the scientist as the "geoid", whose undulations correspond to underlying excesses and defects of mass. In this branch of geodesy India is setting an example which other countries have yet to follow.

INDIANS IN NATAL CONDITIONS OF LABOUR

Out of a total population of about 38,000 Indian immigrants in Natal in 1937, approximately 27,000, or 71 per cent are (according to the 1937 report of the Protector of Immigrants in Natal, just published) in employment in the provinces, and many, in addition, are farming on their own account and carrying on other trades. There is, however, considerable unemployment in and around Durban.

Of those in employment, the largest number, about 6,000, are in the sugar industry. The next largest number are in the corporate bodies, which provide employment for over 2,100. Miscellaneous industries and employment as domestic servants account for 5,650, and tea, coal and railways employ roughly 1,750.

The average rate of wages paid on the Estate is 42s. 6d. per month, with food, accommodation, medical attention and medicine, free of charge.

The total number of Indians employed in coal-mines in Natal during the year was 1,885, of whom 557 were men, 345 women and the rest children.

The wages on the lines remained about the same as before, namely, 1s. 6d. to 2s. 6d. per shift, with food, medicine, medical attention and quarters free.

Apart from the strike by the Indians employed at the Durban Falkirk Iron Works in the middle of the year, no case of labour unrest was reported.

Neither was there any complaint from any of the Indians working on the Estates to the Protector of Indian Immigrants in Natal during the year.

Accommodation Improved

Accommodation on many of the Estates has been much improved, and new barracks are being built to plans issued by the Union Health Department.

The number of Indians in Natal on December 31, 1937, was approximately 1,71,000, of whom 38,000 were males, 28,000 females and the rest children. Of the 171,000 about 26,600 represent the original immigrants and 144,000 are Natal born.

There were 274 more births and 108 less deaths during 1937 than in the previous year, bringing the birth rate to 48.79 per mille and death rate to 14.15 per mille. The corresponding figures of 1936 were 48.84 and 15.31, respectively.

The death rate in 1937 is the lowest for the last six years. There were no arrivals during the year, emigration to Natal having been stopped by the Indian Act of 1911. The total number of Indian immigrants, who returned to India during the year was 232, of which 110 were sent to India from different parts of the Union under the Assisted Emigration Scheme. The number of Indian children attending the schools, both Government and aided, is about 22,500 out of a total children population of 104,500, thus bringing the percentage to 21.

HELP FOR THE RYOT

Irrigation Research In India

USE OF SCALE MODELS OF RIVERS

Seepage : Silt : Flood Control : Reclaiming Waste Land

Details of investigations in irrigation carried out in India during the year, with the object of providing at the lowest possible cost a sufficient supply of water for the cultivation of the largest possible area, in many cases with results of great importance, are given in the Annual Report (Technical) on the work of the Central Board of Irrigation in India for the year 1936-37, just published.

Though the Punjab, United Provinces, Bombay and Sind are the only provinces where these research activities are carried out, the rest of India, as also Burma, share the benefits, as the results are made available to all provinces and to Burma through the Information Bureau maintained by the Secretary, Central Board of Irrigation, at Simla.

Of the problems considered, one that has been engaging serious attention is that of seepage losses from canals. Attempts are being made to evolve a cheap and effective lining for canals and watercourses. A method tried has been the treatment of beds of canals with sodium carbonate. A dilute solution of sodium carbonate applied to the bed has given the best results so far with 40 per cent reduction in losses at comparatively low cost. The process is, however, still in its experimental stages.

In the Punjab a number of distributaries are to be treated with sodium carbonate, and valuable information is expected. In Sind, where canal closures are short and methods developed in the Punjab are unsuitable, experiments are in progress to test the possibility of sealing canal beds by introducing sodium carbonate into the soil by means of a seed drill. Experiments were tried in the United Provinces also with molasses for staunching channels to reduce the permeability of the bed and sides, and as laboratory results are satisfactory, field experiments have been started.

Road Improvement Research

A novel departure with consequences of far reaching importance to rural welfare in India is the application of the method tried with canals to the improvement of kacha or earth roads, of which India has an enormous mileage. Tests are in progress in the Punjab on the improving effect of sodium carbonate on these roads, and the Government of India have given a grant to the Punjab Irrigation Research Institute for this purpose.

A number of experiments have been carried out in the Punjab to find out the type of weirs that could be built on sand foundations without risk of failures. The design of weirs, which are usually constructed across a river to divert the supply into a canal, was hitherto based more or less on empirical rules, and the results were

not always satisfactory, as is indicated by failures or partial failures of a number of such works in recent years. Instances are the failure of the Islam and Rasul weirs in the Punjab, of the Deoha Barrage in the United Provinces in 1929, and of the Anderson Weir in Bengal in 1935; their repair was costly.

A rational method of design has now been evolved after several years of field and laboratory research, and the results made public in the Central Board of Irrigation's publication, "The Design of Weirs on Permeable Foundations".

"X-Raying" A Weir

An electrical method of detecting cavities underneath the floors of weirs and other hydraulic works is also being developed in the Punjab. It is hoped that this will be of great assistance in ascertaining the conditions below floors of existing works, no satisfactory means being available at present for a study of these conditions. When this apparatus is evolved, it will be possible for engineers, where conditions are unsatisfactory, to take timely precautions, to avert failures which can only be rectified at great expense.

Studies of rivers on models were continued in the Punjab and at Poona. Though a recent development in India, too much importance cannot be attached to the study of the behaviour of rivers and the effect of bridges, weirs, and training works on rivers by means of scale models, for this enables the engineer to visualize what is likely to happen and to have some confidence in the results that he will achieve.

Thus a model of the river Ganges at the Hardinge Bridge at Sara on the Eastern Bengal Railway, which has been under test for some time, has proved helpful in solving some of the problems connected with the erosive action of the river at that bridge. Further experiments in this connection were continued at Poona at the Railway Board's request.

Another river model experiment in Poona concerns the river Sarda at the headworks of the Sarda Canal in the United Provinces, where an undesirable flow in the river has developed. The best course of training the river in order to establish a satisfactory flow condition, is being studied on the model.

In the Punjab, a model of the River Sutlej at Islam Headworks is being studied in order to devise means of removing a shoal on the right bank, which causes difficulty in feeding the Mailsi Canal.

Excluding Silt

Excess of silt and undesirable grades of silt are both detrimental to the efficient working of the canals, and involve large expenditure in clearances and remodelling. Investigations are being made in the Punjab on the Upper Bari Doab Canal to study the conditions affecting silt entry into the canal, and a model of the head regulator and undersluices of the canal is being examined to devise the best method of preventing it. Research in the United Provinces on the flow of water in canals has led to a method of design of "stable" channels which will not silt or scour.

Experiments were also carried out in Poona, at the request of the Central Board of Irrigation, to devise the most satisfactory type of canal fall. The importance of the investigation lies in the fact that the surplus energy of the falling water has to be dissipated in such a way that no scouring of the bed and banks takes place. Complete results are expected to be available shortly.

In the United Provinces a study is being made of the possibilities of the use of coal tar instead of paint in steel structures. Coal tar is used for painting steel works in some cases in England and America, and if this method could be introduced in India, there would be a big financial saving.

Reclaiming Waste Lands

Land reclamation was another important study. There are vast areas of uncultivated lands in India, which are capable of yielding crops after proper treatment. The *thur* area in the Punjab is an example. Investigations were made in the Punjab on the best rotation of crops suitable for reclaimed *thur* land, and a system of rotation has been evolved, which is : Berseem Sugarcane—Sugarcane (ratoon)—wheat—cotton. In Poona, investigations were carried out on the improvement of soil tilth of alkali lands by treatment with gypsum, sulphur and lime ; treatment with gypsum gives the best results.

An aerial survey of certain areas was carried out in the Punjab to obtain reliable information regarding the tracts which have gone out of cultivation during recent years. An investigation was also made in the Bombay Presidency on the behaviour of various soil types in the Deccan under irrigation.

In Sind a detailed investigation of *kalar* areas is in progress. Samples of subsoil water from bores which showed a salt content higher than 120 parts in 100,000 parts of water in 1930-31 were collected, and the salt content was examined in order to see whether the salinity had increased during the last five years ; results showed that there had been an appreciable decrease of salinity on both the right and left Banks of the Indus.

"Meandering of Rivers"—a subject of great importance to the design of headworks for canals, training works for bridges, and embankments along rivers for flood protection, was considered. A questionnaire on the subject was circulated in the previous year ; all replies have not yet been received.

The Board recorded the opinion that the problem of water requirements of crops and manural value of silt was important and should be one of the first investigations undertaken by a Central Research Station for Irrigation, if and when established.

To Control Floods

Arising out of the recent increase of floods in Bihar and the possibility of controlling those floods by reservoirs on some of the tributary streams, the Role of Reservoirs in Flood Control was discussed by the Board. The effect of deforestation in the hills on the increase of intensity of floods was considered in this connection and a resolution passed in which the Board drew attention to the Proceedings of the British Empire Forestry Conference in South Africa in 1935, with particular reference to the possible dangerous effect of deforestation on (a) the increase of intensity in floods, and (b) the decrease of dry weather flow of rivers, which would have disastrous effects for cultivators who depend on canal supplies to mature their crops. The Board considered the problem to be an inter-provincial one, as deforestation in one administration might produce serious results in another. The Board endorsed the warnings of the Forest Department, which has from time to time drawn attention to the dangerous effect of deforestation on rivers in India.

The Board decided that at the next annual meeting the fertility of silt and the effect of deforestation on irrigation projects should be added to the subjects already under discussion.

HISTORICAL RECORDS COMMISSION

The Government of India have appointed Dr. Nandalal Chatterji, M.A., Ph.D., Lecturer in History, Lucknow University, as a corresponding member of the Indian Historical Records Commission for a period of three years from July 13, 1938.

INDUSTRIES UNDER THE MICROSCOPE

Monorail Tractors

RESEARCH BUREAU AIDS INDUSTRIAL EXPANSION

Research in magnesite, magnesium and dry ice, artificial silk, paints, starch, hurricane lamps, dry cells, vegetable oils, calcium carbide, electric lamps, glass and glass materials, and many other industrial products of special interest to India are described in the annual report of the Government of India's Industrial Research Bureau for the year 1937-38, just published.

The report deals with the work of the Industrial Research Council, the Industrial Research Bureau and the Research Branch of the Government Test House at Alipore.

The Bureau was established on the recommendation of the Industries Conference on a temporary basis in the first instance for three years, to develop Indian industrial research; the present report surveys the third year of its working.

Despite the difficulties which are inevitably encountered in building up a new organisation of this kind, and the considerable time which has to be spent in the recruitment of the technical personnel and their training to the stage at which they can handle their tasks confidently and efficiently, the Bureau's activities have been multifarious and important.

The utility and benefit of this kind of work to the country have been demonstrated, and the Government of India have therefore placed the Bureau on a permanent basis from March 1, 1938.

The Industrial Research Council held its third session in July 1937, and discussed several important items, amongst which were the allocation of work to laboratories, the programme and progress of research work at the Government Test House, improvement of glass furnaces and glass products, casein plastics, industrial standardisation, and industrial surveys.

Look Out For These Bulletins

The Council gave further consideration to the programme of publication of bulletins on the industries of India.

The list of bulletins on Indian Industrial Research is becoming daily more comprehensive. Heavy chemicals, purification of clay, Indian vegetable oils, manufacture of sulphitation sugar from coloured canes, and the soap industry have been covered this year. Papers on the leather tanning and the handloom industries, and on rape seed and mustard seed oil are in preparation.

These bulletins are written by authorities with a practical outlook on their subjects and are of interest and value to all concerned.

The prize papers scheme was further expanded at the Council's meeting. A com-

petition was advertised in the newspapers in November, 1937. Twenty-one papers on industrial research have been received and will be circulated to members of the Committee who will submit their report to the Council at the next annual session.

A paper entitled "Clock-making in India" was awarded the first prize in 1937, and will be published shortly.

Other publications that will appear shortly are on the construction and economics of an improved glass furnace, construction and operation of a road test track, and a directory giving particulars of Universities, technical colleges and other establishments in India suitable for industrial research. It is prepared to undertake investigations on behalf of industrialists. The directory will be a useful guide to manufacturers and technical students.

Tractor and Monorail

The designs and specifications for various works, plants and equipment were completed this year, and the work of construction began on the road test track scheme undertaken at the instance of the Indian Roads Congress. The track is on land owned by the Calcutta Port Commissioners at a convenient distance from the Government Test House, so that the staff of this establishment will be able to supervise the work to be carried out by means of the track. Power supply is obtained from a nearby sub-station of the Port Commissioners. An order has been placed with a Calcutta firm of electrical and mechanical engineers for the two mono-rail electric tractors embodying many unusual features, which will be used.

The test tractor will be brought into operation probably at the end of this rainy season. It is hoped that the members of the Indian Roads Congress will be able to see the track working during the next meeting in Calcutta in January, 1939.

A report on casein and casein plastics, covering the methods of manufacture employed in India and in industrial countries is being prepared by the Bureau and will shortly be submitted to the Council.

In view of its economic value to the country and its connection with agriculture, the co-ordinated survey of the oil-seed crushing

industry which is being arranged jointly by the oil-seed producing Provinces and States and the Bureau, is of special interest. There is urgent need for the improvement and development of this industry, as it is desirable to encourage the export of oils rather than the seeds, and to retain and utilise the oil cakes in India. Surveys of the tanning and of other specified industries are planned to be taken up subsequently.

A New Industry For India

The manufacture of starches might become an important Indian industry, as there is abundant supply of vegetation suitable for starch manufacture. The Bureau is collecting information from a number of countries, ranging from the Dutch East Indies to British Honduras regarding suitable plants for Indian raw materials; it is proposed to issue a technical note about this shortly.

Detailed technical information regarding the manufacture of spectacles, bakelite, sealing wax, razor blades, typewriter ribbons, buttons, silver thread, and briquettes from paddy husk, is being collected and notes have been prepared in the case of certain of these industries.

Glass Industry Improvements

A considerable amount of valuable research and development work has been carried out in connection with the improvement of glass pot furnaces, glass melting pots, glass bangle decorating materials, glass making sands, and electric lamp glasses. A separate chapter is devoted to this in the report, which indicates the special attention which is being paid to the development of this industry.

That the Bureau is serving an increasingly useful purpose in the industrial development of the country as an industrial intelligence centre is suggested by the fact that technical enquiries during the past year rose by 60 per cent as compared with the previous year.

A useful technical library which is being collected contained 3,864 volumes at the end of the year. The Bureau subscribes for 63 technical periodicals.

COPPER-PLATE 1,500 YEARS OLD

INDIAN MUSEUM ACQUISITION

An early copper-plate dated 169 Gupta era equivalent to 488 A. D. has been received as a present in the Archaeological Section of the Indian Museum, Calcutta, from Mr. Ganapati Sarkar, Zamindar of Belia-gata, Calcutta.

Though originally found at Nandapur on the Ganges' southern bank in the Monghyr district, in Bihar, the plate is reported to have close affinity with the copper-plate grants found in North Bengal during the last few years. It thus forges another link between Eastern Bihar and Northern Bengal, and carries nearly 300 years backwards the union between these two regions which was an accomplished fact in the early

Pala Kingdom in the eighth century A. D. of which historical evidence is available.

The class of records to which this grant belongs invariably refers to the alienation of land for the purpose of some gift to Brahmans, temples or other religious endowments and throws, as does this one, interesting light on the procedure of these gifts as also on the constitution of local authorities of the time. The practice was for the donor to purchase from the State, on payment of the price at a fixed rate of a certain number of gold coins (generally two) to each unit of land measure, waste land in the ownership of the State which he then transferred to the grantee. The parties to the transaction were, therefore, on the one hand, the donor who made the grant and, on the other, the recipient of the gift and the State represented by the Town Council, from which the land was purchased for the purpose of presentation.

The Town Council

One, therefore, often finds in these copper-plates details of the constitution of the town councils of those days which seemed to have been strong representative bodies, wielding great power. A Town Council, it appears, consisted of the Ayuktaka or the district officer and the Nagarasreshthi chief merchant of the town, the Prathamakulika, the leader of the artisans, the Prathama-sarthavaha, the leader of the caravans engaged in transport, the Prathama-kayastha, the first amongst the scribes. The Town Council referred the request of the donor to the Pustapalas or record-keepers, who invariably gave their assent to the transaction on consideration of the money it brought to the State and, what is more, religious merit to the King. According to the 'Sastras, just as the King was entitled to one-sixth of the produce of the land, similarly one-sixth of the merit or *punya* of such pious donations also went to the head of the State.

Still In Use

It appears that the gold coin used in the Gupta period was called the *dinar* (the Greek *dinarius*). Further, some of the terms used for the measurement of land are common even today. The usual practice in those days was to measure the land not by a unit of area, but by a unit of corn which could be sown over a given area. One such measure was known as *Kulyavapa* which meant the area in which one *kulya* of corn could be sown. The word *Kulya* still persists in Bengal in its modern equivalent *kura*. Again, another land measure of a similar character is the *dronavapa*, an area in which one *drona* could be sown. The word is found in use even now in as far off regions as parts of Eastern Bengal and the Punjab State of Chamba in the bosom of the Himalayas, testifying once more to the fundamental unity of Indian culture. A study made of these copper-plate grants reveals that the basic grain measures were as follows:—

Four *prasthas* equivalent to one *adhaka*,
4 *adhakas* equivalent to one *drona*,
and 8 *dronas* equivalent to one *kulya*.

HOW MUCH JUTE DOES THE WORLD WANT?

Researches In Agriculture And Industry

EXPERTS AND INDUSTRIALISTS COMBINE TO SOLVE JUTE PROBLEMS

Indian Central Jute Committee's First Annual Report

A practical programme of work, authoritative discussion of various jute problems, building up of equipment and organizations, appointment of district agricultural staff, recommendations for the establishment of regulated markets for jute to local Governments, building a laboratory for agricultural research, securing of information about overseas markets, improvement of jute forecasts, supply of improved jute seeds, inauguration of an enquiry into the marketing and transport of jute and its products—these are amongst the important activities covered by the first annual report of the Indian Central Jute Committee just published.

Jute is an Indian monopoly but it is subject to various attacks by indirect competition. Certain countries are substituting locally grown hemp for Indian jute for the manufacture of sacks. Paper bags have come into increased use for packing commodities such as cement. The bulk handling of grain and seeds, which does away with jute bags, has also tended to increase. All these have made inroads on the field hitherto exclusively occupied by jute manufactures.

Jute's greatest asset as a fibre is its cheapness. New uses for jute are also steadily developing and can be expanded. Jute carpets, and jute upholstery materials are increasing. With these new uses, but above all with a good standard of efficiency in production, marketing and manufacture, jute can hold its own against all competitors. In order to give a fair return to the cultivator it is necessary to improve efficiency in both production and marketing.

The world's offtake of raw jute and jute manufactures, however, has to depend on the general level of industrial activity and on the demand for primary products such as grain and seeds, as these are shipped in jute bags.

Experts And Growers Co-operate

The 1931 economic depression brought the demand for jute lower, and its prices considerably lower than previously. The Government of Bengal had to undertake propaganda to reduce jute areas to correlate supplies to demand.

The Royal Commission on Agriculture realised the need for scientific improvement both in production and marketing and recommended the setting up of the Indian Central Jute Committee; the Government of India carried out this recommendation on May 28, 1936.

The Committee's functions are research and enquiry into all aspects of the jute industry in India and for this work the Committee has employed research and administrative staff and is erecting laboratories and assembling research equip-

ment. It also makes recommendations to the interests concerned and gives advice to local Governments on the solution of various problems.

The Committee is composed of a number of experts, agricultural and scientific, representatives of the jute industry and agriculture in equal numbers. Its president is the Vice-Chairman of the Imperial Council of Agricultural Research. The I. C. A. R. Agricultural Expert, the Director of the Industrial Research Bureau and the Directors of Agriculture of the three main jute-growing provinces Bengal, Assam and Bihar who are also members, form what might be called the expert scientific research bloc.

There is also a representative nominated by the Co-operative Department of Bengal and two nominees of special interests. Eight representatives each from the industrial and the agricultural side of the jute industry are also Committee members.

The Committee, which is thus thoroughly representative of all sides of the industry, has at its command the services of scientific experts and persons thoroughly familiar with the industry's problems in their respective spheres. This combination not only enables the Committee to secure research results but also their application to the industry and agriculture of jute.

Headway In First Year

The Committee in its very first year has made considerable headway with many problems.

The Committee's programme includes a marketing and transport enquiry, agricultural research and seed supply, technological research, improvement of jute forecasts, collection and distribution of information and statistics, and the appointment of district agricultural staff.

For some years the Government of India, in conjunction with the Provinces and Indian States, have been conducting a survey of the marketing of chief agricultural products to ascertain accurately and completely the exist-

ing state of affairs in market practice. As the collected information regarding the marketing of each of the main crops becomes complete, development work is instituted for improvements in the marketing of that crop. Jute was excluded from the first group of all-India marketing surveys because the Indian Central Jute Committee was about to be set up; the survey of jute marketing and transport has thus been the first concern of the Committee, which employs a special staff for the purpose under the technical control of the Agricultural Marketing Adviser.

The work was started in 1937 autumn and has already made considerable progress, the information collected has been the basis of recommendations made at the end of the year to the Government of Bengal regarding the institution of regulated markets for jute on a trial basis.

"New Strains" And "Heart Damage"

The Department of Agriculture, Bengal, appointed in 1904 a Fibre Expert and set up a fibre research section mainly for work on jute. In its first few years work, that section produced a number of improved strains of jute, notably Kakya Bombai and later D.154 and Chinsurah Green. It also worked on various important problems on the agriculture of jute, particularly manurial and other cultivation requirements and thoroughly investigated heart damage.

On its agricultural research side, the Committee is further developing this useful work to improve the yield of suitable varieties of jute. It is evolving improvements in the agriculture of jute production, trying to introduce uniformity in the produce and to increase its value to the trade. It has made definite progress towards the establishment of a Jute Agricultural Research Laboratory; arrangements have been made with the Government of Bengal for this to be built on the Central Farm at Dacca and for the utilisation of land and other facilities necessary, the staff for this work has already been appointed.

Spinning Trials

One of the main agricultural improvements expected is the production of improved strains of jute for different areas. Sound arrangements are necessary to produce seeds of improved varieties and to distribute them to growers in the different districts. The Committee has embarked on a planned scheme of technological research.

Under this scheme the Committee will carry out spinning trials on the varieties of fibre produced by its agricultural research organization, investigate the constitution and measurable properties of jute and try to find a connection between these measurable properties and their spinning qualities. Systematic investigation into the nature of jute fibre and the different fibre properties resulting from the different conditions of production has been lack-

ing hitherto. The Committee realized that laboratories were necessary to carry out these researches as well as researches into the fundamental characteristics and properties of the fibre.

The scheme aims at a system of rational basis for grading and standardisation of grades. It will lead to improvements in the control of moisture and reduce "wet jute" evils. Large laboratories are being built for this work and equipment assembled, including a complete range of preparing and spinning machinery. The construction of the laboratories and their equipment is well advanced, a considerable part of the staff is already at work.

Looking Ahead

Jute forecasts published by the Government of Bengal are the only official estimates of the area and yield of the jute crop from year to year. This forecast has been based on figures for the year sown to jute on returns from the districts and on the figures of yields derived from the results of the crop cutting trials and from actual yields of Government farms. It is known that, as the jute area is in the permanently settled tract of India, the area figures received from the districts are inaccurate and that the yield figures are incomplete. An accurate yearly forecast of the production of jute is important both to the trade and to the grower.

The Committee is, therefore, attempting to improve the accuracy of jute forecasts. In this it is working in conjunction with the Governments of Bengal, Assam and Bihar and trying to apply modern statistical methods to the determination of the jute area sown each year. If this work succeeds it will be possible to estimate accurately the total area sown by the record of a proportion of jute sown to a comparatively small number of areas chosen at random.

The first series of experiments have been carried out. The second series on a larger scale is now being undertaken.

Practical Help For The Trade

One of the Committee's schemes is for the collection and distribution of information and statistics. The Committee is securing information from India and abroad of the world demand for jute products, the stocks on hand from time to time and facts about consumption of this and similar fibres and the production of commodities like wheat and linseed which affect the demand for jute.

As this information becomes available, it is placed at the disposal of the trade, the growers and local Government to assist these interests to arrange their production to suit demand.

The Committee found that it was essential to have an agency to collect information from the jute growing areas and to distribute in such areas the information obtained through enquiry and research.

ARMY OFFICERS' PROMOTION AND PAY

Full Text Of Mr. Hore-Belisha's Statement

HOUSE OF COMMONS, JULY 28, 1938

Mr. Attlee asked the Secretary of State for War whether he had any statement to make on the promotion and career of officers of the Army.

Mr. Hore-Belisha, Secretary of State for War : The House will recall that my predecessor set up a committee, of which Lord Willingdon accepted the chairmanship, to inquire into the cause of the shortage of officers in the Army and to recommend measures to remedy it. They were also asked to consider whether the system of promotion from the ranks was working satisfactorily and whether it could be extended.

In March last, the situation into which Lord Willingdon's Committee had inquired was fundamentally altered by an announcement which I made in presenting the Army Estimates, indicating the intention to create a new class of warrant officer to take over a number of commands previously held by subalterns. In the circumstances, the shortage of officers into which Lord Willingdon's Committee inquired ceased to exist as a problem. This reform reduced the number of entries required into Sandhurst from 200 per term to 160, and simultaneously the number of applicants for this reduced number of vacancies greatly increased.

Nevertheless, it appeared to His Majesty's Government to be desirable to make the Army career as secure and attractive as possible, and with this object in view inter-Service discussions have taken place over a wider field than that covered by Willingdon's Committee, which provided so much valuable material for consideration. The proposals which have emerged affecting officers in the Army are far-reaching and detailed, but I propose to give the House a general outline of them.

A new system of direct commissioning from the ranks will be introduced in due course in place of the present system of passing candidates from this source through Woolwich and Sandhurst. A further important change, designed to open Woolwich and Sandhurst to any suitable candidate, whatever his means, is the removal of the present limitation on the number of scholarships. In future, scholarships covering the full or partial cost of education at these colleges will be given without limitation of number, wherever the parents' means call for remission or reduction.

It will thus be possible for any qualified candidate to obtain a completely free education at Sandhurst or Woolwich, and, in the circumstances of remission I have mentioned, no charge whatever will fall upon the parents either for his keep, his scholastic material, his uniform or his equipment.

Another feature of the proposals concerns guaranteed continuity of service in the Army, subject to efficiency. At present, approximately 50 per cent of officers fail to reach the rank of major. In future, all officers in the combatant arms will know on entry that they may

expect to reach the rank of major, subject to the usual qualifications, and to be retained in the Service at least to the age of 47, if they are not further promoted. The method of promotion by vacancy, up to this rank, will therefore be abolished.

In future, every subaltern will become a captain in eight years, and every captain will become a major in a further nine years. This compares with considerably greater periods now not exceptionally prevailing. Every officer entering at the normal age will be sure of approximately 10 years' service in the rank of major, if not previously promoted. Beyond the rank of major, promotion will be by selection to fill particular appointments. The system whereby officers waiting for appointments are put upon half-pay will be abolished. The tenure of command and staff appointments generally will be reduced from four years to three.

The ages of retirement for each rank will be lowered :—

Generals and lieut.-generals from 67 to 60,

Major-generals from 62 to 57,

Colonels from 57 to 55,

Lieut.-colonels from 55 to 50, and

Majors from 50 to 47.

These proposals considerably accelerate promotion, and thereby give increased pay at lower ages. In the subaltern ranks, however, in the years before the advantages of this acceleration begin to operate, there will be a substantive increase of pay in the case of second-lieutenants by 1s. a day, and of lieutenants by 1s. 2d. a day. Further, 100 scholarships of £20 a year, tenable for three years, will be distributed annually, and thus cumulatively, among subalterns on first commission who need this assistance. This number will be subject to revision in the light of experience.

It can thus be claimed that the Army career throughout its stages will be possible for an officer without private means.

Retired pay in future will be based on a combination of age and length of total service, up to the rank of colonel, inclusive, and thereafter will be at fixed rate for each rank. This

is in substitution for the present system of a combination of rank and service, which in each individual case has made the retired pay dependent in great degree upon hazard. By these reforms, the maximum rate of retired pay for each rank can in general be earned before the retiring age for that rank, and nothing is lost from periods of unemployment, which in future, if they occur, will be on full pay and not on half pay. To give an example, retired pay of £407 10s. per annum will be earned by a major at the age of 46, having 23 years' service, whereas an officer of the same age and similar service might have had to retire as a captain on retired pay of £271 10s. under the present regulations.

These measures apply to all the combatant corps of the Army, and will come into effect on August 1. The reforms will be so brought into operation that no officer on full pay will suffer compulsory retirement as a consequence, and the reduction in the tenures of command and staff appointments from four years to three will not occasion the displacement of any officer without a year's warning.

In general these measures, including the new time-scale of promotion and incremental stages, will apply, as from the ruling date, to the officers of the British Army on the Indian Establishment. The consequential adjustments of the Indian rates of pay issuable to officers on the Indian Establishment will be decided shortly.

Perhaps the immediate effect of these proposals can best be illustrated by the statement that over 2,000 officers will receive promotion with effect from August 1. In one day, over a quarter of the subalterns and captains in the combatant corps of the Army will be promoted.

CAPTAIN ARTHUR EVANS : Can the right hon. Gentleman tell the House the total cost to the Treasury of these far-reaching and most welcome proposals ?

SIR T. MOORE : Is the right hon. Gentleman aware that this is the greatest contribution to the efficiency of the Army that has been announced since 1914 ?

MR. HORE-BELISHA : In reply to the first supplementary question, the immediate cost to the Treasury is estimated at £360,000 a year, and it will increase to £600,000 a year gradually, until, probably about 20 or 25 years' time, thereafter it will decrease, as the number of officers is adjusted to the required establishment.

COLONEL PONSONBY : Do any of these proposals apply to Territorial Army officers ?

MR. HORE-BELISHA : Conditions are so different in the Territorial Army that it has not been possible to approximate them, but we are looking into the matter from the Territorial point of view to see whether any advantage would be gained.

COMMANDER MARSDEN : How many officers will be automatically retired on August 1, and will they in all cases come under the new pension scheme ?

MR. HORE-BELISHA : A feature of these proposals is that no one will be retired as a result of them.

MR. BENJAMIN SMITH : Now that the right hon. Gentleman has given favourable consideration to this matter, will he turn his beneficent eye to the ranks of the Army ?

MR. HORE-BELISHA : That has already been done.

SIR FRANCIS FREMANTLE : Will any corresponding advances be given to the Royal Army Medical Corps or any other technical corps, or are these proposals limited to combatants ?

MR. HORE-BELISHA : Each technical corps has its own manner of recruitment and of advancement which differs in each case, but each one is being looked into.

NEW PAPER MAKING PROCESS

VICEROY INSPECTS FOREST

RESEARCH INSTITUTE WONDERS

For the first time in India, wrapping paper is now being made by the Forest Research Institute at Dehra Dun from a mixture of mechanical pulp from wood and chemical pulp from grass.

During their recent visit to the Forest Research Institute, Their Excellencies the Viceroy and Lady Brabourne were interested spectators of this process at work in the Institute's paper pulp laboratory.

Their Excellencies, who were received by Mr. L. Mason, Inspector General of Forests, were also shown round the Institute's various display halls.

In the Silviculture hall they saw some beautiful coloured paintings of Indian flowering trees and some remarkable models of Indian forests depicting various methods of forest management. In the Entomological Branch His Excellency was greatly interested in the methods which are being evolved for controlling and destroying forest insects which in the past have done enormous damage to Indian forests.

Their Excellencies were shown numerous examples of furniture and other articles made from Indian woods in the timber display hall, and were deeply interested in the work of the Utilisation Branch, the chief function of which is to discover the various uses to which Indian woods can be put, and the best woods to use for different purposes.

Their Excellencies visited the Utilization Branch's laboratories and workshops. In the timber testing laboratory they witnessed the various strength tests which Indian woods have to undergo before they can be certified as fit for different purposes. In the woodworkshops, the manufacture of plywood and lamin boards with decorative veneer faces was seen, and Their Excellencies accepted two souvenirs of their visit. In the wood preservation section the treatment of Indian woods and the value of preservative treatment in a country like India, where white ants and destructive fungi abound, was explained in detail.

Finally, in the seasoning section, the efforts of the Research Institute to evolve a really cheap method of kiln seasoning wood were explained and the new electric moisture meter was demonstrated.

FOR SERVICE IN EMPIRE'S SCIENTIFIC LIFE

Exhibition Research Scholarships

RECIPIENTS FROM INDIA

For the first time two Science Research Scholarships have been allotted to India for the year 1938 by the Royal Commissioners for the Exhibition of 1851, London.

These have been awarded to Dr. R. S. Krishnan, M.A., D.Sc., Bangalore, and Dr. N. K. Panikkar, M.A., D.Sc., of the Madras Christian College, Tambaram, South India.

The scholarships, which are worth £275 per annum and tenable for two years, are intended to enable students of overseas universities who have already completed a full university course, to devote themselves to research work under conditions most likely to equip them for practical service in the scientific life of the Empire.

Nine scholarships are offered annually, which are, as a rule, allotted as follows : three to Canada, two to Australia and one each to South Africa, New Zealand, the Irish Free State and India.

An Indian student was awarded a scholarship, for the first time, in 1937. This year the number allotted to India has been increased to two.

For Wholetime Research

The scholar is required to devote himself to whole time research in some branch of pure or applied science at any institution approved by the Commissioners in the United Kingdom or abroad. There is no restriction on the choice of subjects by the scholars themselves, as also of the professors under whom they propose to work ; although the approval of the Royal Commissioners has to be taken, this is usually granted as a matter of course.

The High Commissioner will make necessary arrangements for the admission of the Indian Scholars to the institutions, where they choose to do their research work.

Besides the scholarship, a scholar may receive an extra grant of £25 on presenting, within three months of the expiration of his scholarship, a complete and satisfactory account of his work. An additional allowance not exceeding £30 per annum towards the cost of University fees may be granted to a scholar if, in the opinion of the Commissioners, he is in need of such assistance.

The continuation of the scholarship for the second year depends upon the satisfactory nature of the scholar's first year's work, at the end of which he is required to furnish a report of his work. Renewal for the third year is granted only where it appears that such renewal is likely to result in work of scientific importance.

In India all University Institutions having post-graduate Departments of Science, including those independent institutions which enjoy a status comparable with that of a University or Department of a University, for instance, the Indian Institute of Science, Bangalore, have been recognised by the Commissioners as eligible to make recommendations for the award of the scholarships.

These recommendations are subjected to a preliminary examination by a Special Committee set up at the request of the Commissioners by the Government of India, and a selection of not more than six is forwarded to the Commissioners, who make the award.

To be eligible for the scholarship, a candidate must have been a student of science in a University or a University Institution for a period of not less than three years, and must have a record of work indicating high promise of capacity for advancing science or its application.

Evidence of this capacity, which is the main qualification for the scholarship, is strictly required. The most suitable evidence is a satisfactory account by the candidate of research work already performed.

To accord more fully with the ideas, which Albert, the Prince Consort, had in mind for the utilisation of the surplus funds of the Exhibition of 1851, the scheme of Science Research Scholarships was inaugurated about 1891 as a result of the recommendations of a Committee, with Lord Playfair as Chairman, which proposed that scholarships for research in the experimental sciences should be awarded of a higher order than any previously awarded by any other bodies. Gradually the scope of the scheme was extended till it came to embrace the whole of the British Empire.

The aim of the Commissioners in instituting this scheme has been to give to the research scholars opportunities for acquiring a fresh insight into the methods and techniques of research, to provide a much-needed incentive to post-graduate study and to build up the nucleus of a future army of scientific workers, who would devote themselves to the advancement of science and its industrial applications, and,

(Please Turn to Page 87.)

KEEPING THE ARMY FIT

PROGRESS IN DISEASE CONTROL

Although climatic conditions favour the spread of malaria, the incidence of the disease amongst British troops in India was 58.0 per 1,000 or 9.5 per 1,000 lower than that in 1934 and only 1.9 more than that in 1935, which is the lowest incidence on record. The Northern Command and Burma apart, there was a general decrease.

This is what the Public Health Commissioner with the Government of India says in Volume II of his annual Report for 1936 which deals with the health of British and Indian troops in India.

The increase of malaria in Northern Command was an aftermath of the Mohmand Operations of 1935 where "delay action" quinine was given to the men in camps notoriously malarious. While this enabled men to remain on duty, it re-acted later by producing an increased number of relapsing cases and latent fresh infections during the following spring. In the Rawalpindi District, moreover, the mosquito breeding season extended into late November, causing increased admissions into hospital.

In Multan which was the worst malarial military station during the year, an admission rate was recorded of 176.0 per 1,000; for this, the change in climatic conditions with increased humidity and rainfall, which has become apparent in the areas affected by new irrigation from the river Indus, is considered responsible. Increased malaria in Hyderabad, Sind, also, it is said, is attributable to the same cause.

In Delhi, however, malaria incidence has been still further reduced from 87.5 per 1,000 in 1935 to 71.6 per 1,000 in 1936. This is due, at any rate, in part to the intensive anti-malaria measures commenced during 1936 in and around Old and New Delhi.

Among Indian troops malaria has steadily declined since 1933, the rates per 1,000 being 123.1 for 1936 and 212.2 for 1933, a decrease of over 40 per cent. The Southern Command had the smallest admission rate of 78.9 per 1,000; Eastern Command 116.8; Western Command 128.4; Northern Command 139.6 and Burma District 150.7.

During the year, 44 cases of fevers of the typhus group occurred among British troops as compared with 19 in 1935. In addition 47 cases were diagnosed among Indian other ranks. Of a total of 108 recorded cases, 45 cases occurred in the Northern Command; 29 in the Eastern Command; 29 in the Southern Command and 5 in Burma; there were no cases in the Western Command.

The incidence of enteric fevers among British and Indian troops during the year was 3 British and 5 Indians as compared with 9 British and 13 Indians during 1935. The incidence in 1936 was the lowest ever recorded and the admission ratio was the lowest during a period of 65 years.

Among Indian troops in 1936 the admission rate was 0.7 per 1,000 as compared with 1.4 per 1,000 in 1935, there being actually 88 cases less in 1936 than in 1935. The number of deaths in both British and Indian troops from enteric fever was also greatly reduced.

The main cause for this decrease in incidence appears to be the improvement in the protective vaccine against this group of diseases during the past few years.

But though strict attention to the general hygiene of military areas is insisted upon, there was no corresponding reduction among the civil population—far less any marked change; on the contrary there was a slight increase. Increasing interest is, however, being taken by all Indian units in child welfare among their families and numbers of enteric group cases, which previously would have escaped notice, are now being brought to light and properly treated.

Dysentery Declines

Among British troops the admission ratio for dysentery dropped by 4.6 per 1,000 from 29.2 per 1,000 in 1935 to 24.6 per 1,000 in 1936 and is the lowest for some years. This is, however, offset by an increase in admissions for diarrhoea and colitis leaving a decrease of 1.4 per 1,000 for the whole group of diseases. Cases were as usual sporadic and no epidemic occurred.

Among Indian troops only 4 deaths occurred among the 1,277 dysentery cases that took place, thus giving a case mortality of 0.31 per cent. In 1935 there were 2 deaths in 1,424 cases and a case mortality of 0.14 per cent.

The striking range of the fly and the absence of any reliable method of producing active immunity against the numerous varieties of dysentery bacilli common in India mainly accounts for the fact that the admission rate to hospital among British troops was in 1936 still as high as 42.1 per 1,000 as compared with an admission rate of 1.5 per 1,000 for the enteric group of fevers.

Baluchistan District (Quetta) had the high admission ratio of 37.6 per 1,000 and Poona Brigade Area a ratio of 34.9 per 1,000.

Details are also given in the report of general health statistics of the Army in India. In the British Army, amongst officers, the rate of admission to hospital during the year was 428.8 per 1,000 compared with 470.1 in 1935, while, amongst soldiers, it was 582.1 per 1,000 against 567.1 in the previous year, with the total admission standing at over 30,000.

In Indian Army the admission rate of officers sick in hospital for 1936 was 346.3 per 1,000 of strength as compared with 346.8 in 1935. The number of Indian soldiers admitted to hospital during the year was about 50,000 or 426.5 per 1,000 of the strength as compared with 422.7 in 1935. There was thus an increase of 3.8 per 1,000 over the corresponding figure of the previous year.

BUT WHAT WOULD PRIVATE MULVANEY HAVE SAID ?

Attempts recently made in the Northern Command to reduce the number of hours spent in barrack rooms during hot weather have helped to minimise the adverse psychological effect of the hot weather on the troops.

Reveille was held at a later hour to enable men to get more sleep in the cool early hours of the morning. Work was carried on out of doors, in the shade as much as possible, during the morning. The hot dinner was also postponed until the evening and a light mid-day meal given instead.

Another innovation was to send troops into bivouacs for 24 hours in the middle of the hot weather, under medical supervision. No ill effects resulted, and the troops liked it as a relief from the monotony of barrack life in the hot weather.

There were thirteen cases of heat stroke with three deaths, and 39 cases of heat exhaustion with one death during the year ended March 31, 1937. The majority of cases occurred in Northern Command where, however, the hot weather during the same year was not quite as severe, nor did it last quite as long as in the previous year.

Very complete chemical investigations on the blood serum of heat exhaustion and heat stroke cases were carried out during the year by Major D. N. Chakravarti, I.M.S. at Allahabad. These investigations were extended over the year 1937 and the preliminary results are being published in the Indian Journal of Medical Research.

STRENGTHENING INDIA'S CREDIT LOWER INTEREST TO ENCOURAGE THRIFT

That specially favourable rates of interest higher than those justified on a strictly commercial basis have been fixed for Post Office Savings Banks and Postal Cash Certificates to encourage thrift among small holders, to whom this type of saving is restricted, was one of the interesting facts which emerged recently before the Legislative Assembly Public Accounts Committee when they examined the accounts under the control of the Finance Department, Government of India.

Reduction in sterling debt and export of bullion were amongst other subjects that came up for consideration.

It was explained that the reduction in the sterling debt that had occurred during 1936-37 had been brought out by paying off the sterling loan which had matured and partly replacing this by the rupee loan floated in India. The ex-

port of bullion from India that had occurred during the last few years had been equalled by the repatriation of sterling debt and accumulation of sterling securities which had been effected to the amount of nearly Rs. 50 crores, and had thus strengthened India's credit to this amount.

The Committee were informed that the recommendation made by the Public Accounts Committee last year that any further expenditure on New Delhi which was not clearly remunerative, should be charged to revenue and not to capital, had been accepted in principle, and that though at present it was not practicable to meet the cost of all unremunerative items from current revenue, such items would only be charged to capital if they were both large and indispensable.

PLANNED DEVELOPMENT FOR NEW DELHI

The development of New Delhi has now reached a stage when it is desirable to take stock of the position, to see how far the original plan of development has been followed, and with what results, and to consider, in the light of the experience gained, what modifications of that plan are required with due regard to the necessity for the preservation and improvement of the aesthetic features of the new city, says a Resolution of the Government of India.

The area for further expansion within the existing limits of New Delhi being extremely limited, the Government of India wish to avoid the risk of any haphazard development and have accordingly decided to appoint a Committee with the following terms of reference :—

“ To review the development of New Delhi and its environs and advise, in the light of the probable needs, on the plan to be followed and the steps to be taken in controlling future development.”

The composition of the Committee shall be as follows :—

CHAIRMAN.

1. The Chief Commissioner, Delhi.

MEMBERS.

2. The Deputy Secretary to the Government of India in the Department of Labour.
3. The Chairman of the Improvement Trust, Delhi.
4. The Superintending Engineer, Delhi Provincial Circle.
5. The Consulting Architect to the Government of India, Central Public Works Department.
6. The Chief Health Officer, Delhi.
7. An officer of the Malaria Institute to be nominated by the Chief Commissioner.
8. The Financial Adviser to the Chief Commissioner, Delhi, who will also be Secretary to the Committee.

The Committee is expected to begin to function early in November 1938 and will be required to submit its report as soon thereafter as possible.

MONEY IN SOAP-SUDS

HINTS TO MANUFACTURERS

The housewife of ancient times probably laid the foundation of our present day soap by mixing goat's fat, bone grease, and olive kernel oil with wood ashes for her adornment.

The ancient Indians used barks, leaves, pods, pulses, seeds, nuts, oilcakes and soap-nuts, and produced all the attributes of a well-made modern toilet soap. Soap was also known in Europe as early as 1500 B.C. and has been mentioned in the Christian Bible, though according to Pliny the Elder (A.D. 23-79) it was the invention of the Gauls. Amongst the ruins of Pompeii, destroyed by the eruption of the Vesuvius in A.D. 79, remnants of soaps are said to have been unearthed.

Chevreul and Leblanc in the 19th century gave a scientific basis to soap-making and started the industry, which has since developed by leaps and bounds.

This rapidly developing industry of India had modest beginnings. As recently as 1879 a small soap factory was started in Meerut by the North-West Soap Company, which turned out a small quantity of soap for local consumption. Another factory was subsequently set up at Calcutta by the same firm. These factories had a chequered career, but now British India and the Indian States are estimated to be producing about 75,000 tons of soap yearly from nearly a thousand large and small factories, to a total value of Rs. 34,250,000 per year; 50,000 tons are household soaps valued at Rs. 2,00,00,000; 15,000 tons are toilet soaps valued at Rs. 1,12,50,000; 10,000 tons are industrial soaps valued at Rs. 30,00,000. These are facts recorded in the bulletin just published by the Industrial Research Bureau, entitled "The Manufacture of Soap in India" by Mr. A. K. Menon, B.A., F.C.S., Superintendent of the Kerala Soap Institute of the Government of Madras.

The Swadeshi movement of 1905 gave the industry an impetus, but factories started, particularly in Bengal, did not flourish for lack of capital and technical knowledge.

The second stage of development occurred during the Great War, when the soap industry established itself fairly securely. The large internal demand and military requirements encouraged the enterprise.

At the instance of the late Sir Fredrick Nicholson, the Government of Madras established a factory in 1914 at Tanur, a fishing village on the Malabar Coast, which was subsequently transferred to Kerala. The new factory (Kerala Soap Institute) was equipped with the latest equipment and plant. Mysore and Hyderabad States followed this example.

A large number of students have been trained at the Kerala Institute, and are now employed

in private factories in various parts of India, Burma and Ceylon.

An idea of the State of the Indian soap industry at that time can be had from a speech made by Sir Fredrick Nicholson 22 years ago, in which he said that India was importing one-eighth of a pound of soap per head per annum, or a yearly total of about 18,500 tons of soap worth about Rs. 75 lakhs. He hoped that India would be able to exploit the enormous scope which existed. This hope has been more than fulfilled; the output of Indian soap has almost trebled, so that some is now being even exported to Ceylon, Iraq, Aden and other adjoining territories.

Side by side with this increase in production imports have also decreased. From Rs. 3,30,000 worth imported in 1876-77, imports reached the huge figure of Rs. 2,04,30,000 in 1920-21; ever since there has been a continual decline till in 1936-37, the figure of Rs. 26,85,632 was reached.

Japan has played her part in this trade with India. From 1,000 cwt. of soap imported in 1913-14, the imports went up to 30,000 cwt. in 1923, but since then the popularity of Japanese soap has waned.

The Indian soap industry's growth was most marked during the war, and in 1913 there were 11 factories in British India each producing over 600 tons of soap per annum, and 46 below 400 tons per annum, the total output being 22,000 tons. The toilet soap output, however, was then only 710 tons.

The bulletin deals with a variety of aspects of the soap industry in India. It discusses fats and oils used in soap-making, and gives a convenient grouping of animal and vegetable fats, oils, and fish oil; it covers the refining of oils, rosin or colophony, and the several processes in use. One chapter deals with the problems confronting soap manufacturers, and discusses the possible causes and cure of sweating and rancidity of soaps.

Industries auxiliary to the soap industry like oil seed crushing, the manufacture of paper and paste board, printing, and the timber trades are discussed.

The report emphasises the increasing possibilities of the demand for soap in India, and indicates that India will be in a still more satisfactory position in respect of the major raw materials for this industry when the proposed new caustic soda factories are established in Bengal and Madras.

Appendices give tables of specific gravities and the properties of solutions, and the influence of temperature on them.

The Bulletin carries further the work of the Oils and Soaps Committee of the Industrial Research Council, which reported to the Council in June, 1936, on the various problems connected with soap-making in India.

XB ENGINES

INQUIRY COMMITTEE APPOINTED

In his report on the cause of the railway accident near Bilita on the East Indian Railway on July 17, 1937, Mr. Justice Thom, Kt., D.S.O., M.C., recommended that an expert independent committee should be appointed to enquire into the design, the purchase and the continued purchase of XB engines. The Government of India have accepted this recommendation and have arranged for the appointment of a committee.

They intend that the investigation of the Committee, which will be designated the Pacific Locomotive Committee, should not be confined to XB engines but should also cover the other two types of broad gauge "Pacific" engines, viz. XA and XC.

The Chairman of the Committee will be Lt.-Colonel Mount, C.B., C.B.E., R.E. (Retd.), Chief Inspecting Officer of Railways, in the Ministry of Transport, England.

The Committee will include :

Mr. R. Carpmael, Chief Engineer (Civil), Great Western Railway ;

Rai Bahadur P. L. Dhawan, late Chief Engineer, North-Western Railway, now Member, Federal Public Service Commission ;

Monsieur Léguille, Regional Chief Mechanical Engineer, French National Railways ;

Mr. W. A. Stanier, Chief Mechanical Engineer, London Midland & Scottish Railway.

Mr. K. C. Bakhle has been appointed as Secretary to the Committee and Mr. E. S. Cox as Technical Assistant.

The Committee are requested to consider the design and operation of three classes of engines, viz. the XA, XB and XC types and to advise on :—

(1) the suitability of the designs, as originally framed and as subsequently modified, for the types of work for which the engines were intended ;

(2) the suitability of the procedure followed in preparing and approving the designs for these engines ;

(3) the circumstances attending, and the justification for, the initial and subsequent purchases of these engines ;

(4) the conditions subject to which these engines can be used with safety, with particular reference to their suitability for the track on which they are required to run and conversely the suitability of the track for these types of engines ;

(5) any modifications which would have the effect of increasing their scope without any sacrifice of safety ; and

(6) any modifications that should be made in the procedure hitherto followed for the trial and purchase of engines.

The Committee is expected to assemble on September 1, and after pursuing its enquiries in India, to sail in the middle of October for Europe where the report will be completed.

Who's Who On The Committee

Lt.-COL. MOUNT, the Chairman, as Inspecting Officer and later as Chief Inspecting Officer of Railways in the Ministry of Transport, has years of quasi-judicial experience in railway enquiries conducted in the United Kingdom, many of a highly technical character ; this experience and his status independent of Railway Authorities, renders him a suitable Chairman.

MR. R. CARPMAEL is a Member of the Council of the Institute of Civil Engineers, member of the Institute of Mechanical Engineers and Fellow and Past President of the Permanent Way Institute. He was also awarded the Institute of Transport Gold Medal for a paper entitled "Speed and Safety on Railways."

RAI BAHADUR P. L. DHAWAN, was for some years Deputy Chief Engineer of the North-Western Railway, and was later appointed Chief Engineer of that Railway from which post he was selected as a Member of the Federal Public Service Commission.

MONSIEUR LEGUILLE, was Joint Chief of Research and Running on L'Est Railway of France before the amalgamation of that railway in the National French Railways ; he was joint author in 1937 of a technical paper on the means provided to improve the guiding of locomotives on tract.

MR. W. A. STAINER, who was a member of the Indian Railway Enquiry Committee, is a Past President of the Institute of Loco Engineers, and a member of the Council of the Institute of Mechanical Engineers.

JUVENILE EMPLOYMENT IN MINES

INDIA AHEAD OF OTHER COUNTRIES

That the law of India concerning the employment of juvenile workers is now in advance of that of most European countries, as no person under 15 may be employed in or about a mine, and no person under 17 may be employed without a medical certificate, is brought out in the International Labour Office Publication entitled "Problems of Industry in the East" recently published.

It may be recalled that the Royal Commission on Labour recommended that no child under the age of 14 years should be allowed to work in or about a mine. At the time when they reported the limit fixed by the law was 13. In the amending Bill brought by the Government of India it was proposed to fix the age at 15, and this was accepted by the Legislature. The Select Committee on the Bill, following a principle adopted on the recommendations of the Commission in the Factories Act, added a provision ensuring that persons between the ages of 15 and 17 could not be employed below ground, unless they have been medically certified as fit for such work. This recommendation, too, was incorporated in the Act as finally passed.

NEW LIGHT ON MUSLIM HISTORY

IMPERIAL LIBRARY MANUSCRIPT PUBLICATION UNDERTAKEN

New light is likely to be thrown on the Muslim History of Hirat of the 13th Century A. D. and on contemporaneous events of historical importance, when the Imperial Library, Calcutta, publishes the manuscript "Tarikh-i-Hirat", now being printed.

Few are aware that in the fairly large collection of Arabic and Persian manuscripts in the possession of the Buhar Library, which forms an integral part of the Imperial Library, Calcutta, there is none so valuable as the manuscript in Persian called, the "Tarikh-i-Hirat" which is believed to be the only copy now in existence.

A Beautiful Manuscript

The author describes his own times in this unique work of the highest importance. He gives on an elaborate scale an accurate account of the city of Hirat and the Malik Kings of the Kurt race, who ruled there, and of all the important events of historical interest, which took place there between the years 618—721 A.H. equivalent to A.D. 1221—1321.

Later historians have borrowed from this work, but it still contains original portions which have never yet been published.

The manuscript is written on beautiful, bold and clear Naskhon good thick paper, with the headings in red throughout. It is not dated, but the handwriting and the general appearance of the copy suggest that it was transcribed in the author's life-time or immediately after his death.

Mr. A. H. Harley, formerly Principal, Calcutta Madrasah, when asked for his opinion regarding the publication of the manuscript, wrote as follows :

"I have to point out in favour of the publication of this work that Muhammadan history, from the period of the fall of Baghdad in 656 A. H. [1258 A. D. down to the Mughal times, is still an enormous mass of ill-scrutinised data. The task of verifying and correcting could be expedited by making available to scholars a work of so early date as this, in which the author describes at length current events. Two of our main sources at present are the later Raudat-us-Safa, a composition that is not always accurate, and Farishta, which is often inaccurate. I have noted one place where Raverty, part of whose trying labour would have been mitigated by this history of Hirat, in his notes to the Tabaqat-i-Nasiri quotes a date from Raudat-us-Safa, which differs from that in this history, and the latter is the more likely to be the authentic one."

The entire work consists of 606 manuscript pages, of which about 400 pages or about two-thirds had been printed up to the end of March last.

PRACTICAL BOTANY

NEW FLORA IDENTIFIED

Investigations resulting in the identification of new botanical specimens are described in the report of the Botanical Survey of India for the year 1936-37.

Identification of some 3,500 specimens was carried out during the year, the heavier collec-

tions coming from Sikkim and the Bhutan Himalayas. The Bhutan Himalayas and their extension eastwards as far as the frontiers of India and beyond, are still mostly *terra incognita* botanically. Even stray collections from other parts of the great Himalayas have yielded species new to science.

Information was supplied during the year by the Botanical Survey of India on plants of economic importance such as the santonin-yielding *Artemisia*, the nutmeg of commerce, the opium poppy, the gul mohurtree (*Poinciana*) and weeds harmful to the tea plant.

The report brings together and reviews a mass of valuable information on the recent discoveries of new plants from private collections in several parts of India and Burma and on the Indian Provincial floras, namely, those of Madras and Assam, which has a direct bearing on the progress of the study of Indian botany.

New Exhibits For The Gallery

An important part of the activities of the Botanical Survey is the work carried out in its Industrial section attached to the Indian Museum, Calcutta.

During the year 341 specimens have been added to the collection of exhibits. These are mostly fibres, species, oil seeds, medicinal plants and product of cottage industries, collected from South India, United Provinces and Bombay by the Curator during tours. Some specimens of cultivated plants were also added to the herbarium attached to the section.

Notable amongst other specimens exhibited in the gallery during the year are the coconut shells brass-laid and engraved, procured from Travancore, a full exhibit of lac showing the different stages of production with illustrative photographs, and a comprehensive exhibit of various kinds of silk produced in Bengal, showing the different stages from the eggs to the various finished products. Business men, as well as students, took advantage of the facilities to study the exhibits.

Information on numerous economic plants was supplied to correspondents both in India and abroad and assistance rendered to research workers by obtaining for them authenticated specimens of plants or portions of plants whenever they were wanted.

Cinchona Production

The Botanical Survey had charge of the Cinchona plantations of the Government of India during the year. These were in Burma, but on the advent of separation from India, they were transferred to the Government of Burma on April 1, 1937.

All the available bark was stripped off and despatched to the Mungpoo Factory. Extraction of quinine from the bark went on as usual, the year's yield being 7,464 lbs. of quinine and 4,568 lbs. of Cinchona Febrifuge.

The stock which at the opening of the year was over 150,000 lbs. of quinine of all forms ended with a balance of a little over 130,000 lbs.; revenue realised during the year was a little over Rs. 6½ lakhs.

**“ ALL UP ” AIRMAIL
TO AUSTRALIA
BUSINESS MEN PLEASE NOTE**

The “ All Up ” Empire Air Mail Scheme (under which letters and postcards are despatched from India by air without air surcharge to certain countries) was extended to Australia on August 1, 1938.

All first class mails, i.e., letters, postcards and packets weighing up to 4 lbs. 6 ozs., from India will be despatched solely by air to the under-mentioned countries without any air surcharge but the rates of postage will be 2½ annas for each ½ oz. in the case of letters and letter packets and 2 annas for each postcard.:

Commonwealth of Australia (comprising New South Wales, Queensland, South Australia, Victoria, Western Australia, Tasmania, Papua or British New Guinea and Norfolk Island).

New Guinea Mandated territories.

Marshall Islands (Nauru).

Fiji.

New Zealand and its dependencies and the man-
dated territory of Western Samoa (Apia).

British Solomon Islands Protectorate.

Gilbert and Ellice Islands.

New Hebrides.

Friendly or Tonga Islands.

All classes of mails other than first class mails (letters, letter packets and postcards) will continue to be despatched by surface route as at present at the existing rates of postage. Money orders will be advised by air without any special air mail fee to such of the foregoing countries to which there is a money order service, and insured articles will also be sent by air to those countries to which insurance for letters is available (see the Foreign Post Directory of the Post and Telegraph Guide).

The first aeroplane carrying the mails on the “ all-up ” basis, which left Calcutta on August 1, reached Sydney on August 6. In the return direction, the first plane carrying the “ all-up ” mails left Sydney on August 9, and arrived at Calcutta on August 15 ; it is due at Southampton on August 18.

There will be three services per week between Southampton and Sydney in each direction and there will in addition be two land plane services *via* Delhi terminating at Calcutta as at present, thus making five services a week between England and Calcutta. Local postal notices should be consulted for times of posting.

Abridged Time Table Of “ All Up ” Mail
From England to India and Australia.

Departure Southampton.	Arrival Karachi.	Arrival Calcutta.	Departure Calcutta.	Arrival Sydney.
Wednesday morning.	Saturday morning.	Saturday evening.	..	..
Thursday morning.	Saturday evening.	Sunday evening.	Monday morning.	Saturday evening.
Friday morning.	Monday morning.	Monday evening.	..	..
Saturday morning.	Monday evening.	Tuesday evening.	Wednesday morning.	Monday.
Sunday morning.	Tuesday evening.	Wednesday evening.	Thursday morning.	Tuesday evening.

From Australia to India and England.

Departure Sydney.	Departure Calcutta.	Arrival Karachi.	Departure Karachi.	Arrival Southampton.
Tuesday.	Sunday noon.	Monday noon.	Monday noon.	Thursday.
Thursday.	Tuesday noon.	Wednesday noon.	Wednesday noon.	Saturday.
..	Wednesday morning.	Wednesday evening.	Thursday morning.	Saturday evening.
Saturday.	Thursday noon.	Friday noon.	Friday noon.	Monday.
..	Saturday morning.	Saturday evening.	Sunday morning.	Tuesday evening.

SOUTH INDIAN HISTORY

ARCHÆOLOGICAL SURVEY'S DISCOVERIES

As a result of collections made by the office of the South Indian Epigraphy (Archæological Survey of India), Madras, foundations are being laid for a new history of South India, says the latest Annual Report on South Indian Epigraphy, 1934-35, just published. The discovery of 449 stone inscriptions and 25 copper-plate grants from the Madras Presidency and the Bombay-Karnatak, which throw a flood of light on the dynastic history of the South, is described.

Of the records examined the most important are the copper-plate charts which include some grants of the old Kalinga kingdom and of the Eastern and Western Ganga dynasties of the East coast. From one of these records are known now for the first time the names of four Kalinga kings, Chandvarman, Umavarmān, Anantavarman and Ananta-Saktivarman assignable to the fifth and sixth centuries A. D.

New information has been collected about the Eastern Gangas, who ruled over the modern Ganjam and adjoining Districts, from a record of King Hastivarman, who ruled in the sixth century A. D. and from a record of Kirttiraja, which enumerates four generations of the king's ancestors. A possible matrimonial alliance of this king Kirttiraja with the powerful Rashtrakutas of the Deccan is suggested by the name of his queen which was Rattamahayī.

One Thousand Years Old

A tenth century grant of one Netta-Bhanjadeva, who was apparently a feudatory ruler, as shown by his title Mahamandalesvara, was recovered from Ganjam District, which gives further proof of the antiquity and expansion of the Bhanja family that to this day rules over Mayurbhanj.

Some light is thrown on the obscure history of Telingana territory after the downfall of the Kakatiya kingdom early in the 14th century by a copper-plate of Kapaya-Nayaka said to rule from Ekasilangari and dating to 1346 A.D.

A grant of Kapilesvara, the powerful Gajapati king of Orissa, dated Saka 1380 (A. D. 1458) refers to the all-round campaign waged by this king against the rulers of Vijayanagara, the Bahmanis of Gulbarga and even the distant kingdoms of the Sultans of Malwa and Delhi.

Stones Which Speak

The stone inscriptions, which were collected mostly from Tamil-Nadu and the Karnatak, are fully representative of the main dynasties of the South, namely, the Pallavas, the Cholas and the Pandyas in the South and the Chalukyas, the Rashtrakutas, the Kalachuryas and the Yadavas in the Karnatak. An epigraph of Kulottunga-Chola III (A. D. 1197) is, it is said, of special interest as recording a political agreement or compact between two local chieftains in the South Arcot District.

Of the Karnatak inscriptions, of which copies were taken, the earliest belongs to the class of *vira-gals* or hero stones (set up to commemorate heroic deaths) which abound in almost every village in the South, and this particular inscription dates back to the beginning of the eighth century A. D. to the time of the early Chalukya king Vijayaditya.

USE IT IF YOU WANT IT TO REMAIN

At present Post Office Rules permit the acceptance only of unregistered letters and postcards for transmission under the Express Delivery System.

The Government, however, have had under consideration the question of extending this facility to book packets in order to enable the members of the public in general and press correspondents in particular to despatch expeditiously manuscripts, to newspapers, etc. It has been decided to extend, as a tentative measure for one year only, with effect from August 1, 1938, the privilege of sending Book packets under the Express Delivery System, on the terms and conditions applicable to unregistered letters and postcards as laid down in clauses 28-B and 54-A of the Post and Telegraph Guide. The fee for Express Delivery will be the same, namely, 2 annas.

On the expiry of the period if it is found that the public have made ample use of the new facility, the arrangement will be confirmed.

How Much Jute Does The World Want ?

(Continued From Page 70.)

The Committee has, therefore, financed the employment by the three Local Governments in all jute producing areas of a large staff of agricultural assistants to form a link between its research and enquiry on the one hand and the growers and primary traders on the other. This staff is employed by the jute portion of the Agricultural Departments. In addition to ordinary agricultural propaganda, the staff is also supplying information to the Committee's Marketing and Transport Enquiry regarding local condition of prices, and important traders. The staff also supplies information to the Local Governments on the kinds of jute produced in the different areas.

As the staff grows familiar with the conditions of jute cultivation and the areas in which it is working, it will become a most valuable part of the Committee's research organization. In all the Committee spent during 1937-38 just over Rs. 3,00,000, provided for the purpose by the Government of India. In 1938-39 it is proposed further to expand these activities and to spend about Rs. 6,00,000.

INJURIES TO WORKMEN

PROTECTING LABOUR INTERESTS

LEGISLATION CONTEMPLATED

The Government of India have, it is understood, under contemplation a legislative measure of considerable importance, which will give additional protection to the interests of workmen in cases of injuries sustained in the course of their occupation.

Though not strictly a matter affecting workmen's compensation legislation, the question is still connected with it. Persons injured by accidents may have a remedy by filing suits for damages against their employers in Civil Courts, and under the law applicable, two defences may be evoked by the employer to defeat the claims which he should justly be called upon to meet.

One is the defence of "common employment" by which an employer can plead that an accident was due to the default of a fellow workman, and that, therefore, he is not normally liable to pay damages; the other is the defence of "assumed risk" by which an employer is not liable for injuries caused to workmen through the ordinary risk of employment, and a workman is presumed to have assumed risks which were apparent when he entered upon his occupation.

Both these pleas are available under the common law of England in civil suits for damages for injuries sustained by workmen.

Royal Commission's Recommendations

The Royal Commission on Labour, which went into this question, regarded both of "common employment" and "assumed risks" as inequitable and recommended by a majority that a measure should be enacted abrogating these defences. Their recommendation was referred to the Provincial Governments and Minor Administrations in 1932. The recommendation had the support of most of these Governments.

The Government of India have accepted the recommendations of the Royal Commission in principle, but have been compelled to defer introduction of the necessary legislation because of the heavy legislative programme which they had to put through all these years.

Recent judicial decisions of a conflicting nature have, however, convinced the Government that legislation cannot further be postponed, and that the time has come to prevent recourse to these inequitable defences, which are believed to be still open to employers. The Bill on the subject, it is expected, will be introduced in the coming session of the Central Legislative Assembly.

When the Indian Workmen's Compensation Act was first introduced, it had, in addition to the provisions for workmen's compensation, clauses designed to abrogate these defences in certain cases; but the Joint Select Committee

of the Legislature deleted these clauses apparently because they were not satisfied that the doctrines, which were derived from the British common law, would be accepted by Indian courts. But they observed, at the same time, that if the doctrines were so accepted and were regarded as inequitable, they should be removed for all workmen; the Royal Commission on Labour held, however, that there was need to ensure that they might not be invoked.

Ordinarily a workman receiving more than Rs. 300 does not come under the Workmen's Compensation Act, and his only remedy is in the Civil Court.

GOVERNMENT STORES

PREFER INDIAN GOODS

Not only were stores worth £1,338,000 purchased by the India Store Department, London, but over a million pounds worth of stores purchased in India and obtained from Europe were also inspected by their expert staff, the Legislative Assembly Public Accounts Committee were informed when they met to examine the accounts of the Indian Stores Department, under the control of the Labour Department, Government of India.

As regards the purchases of the Indian Stores Department, it was stated that the amount supplied to the Defence Services had steadily increased from Rs. 100 lakhs in 1935-36 to Rs. 180 lakhs in 1937-38; and that at the same time the Provincial Governments had increased their purchases through the Indian Stores Department which gave definite preference to articles manufactured from materials obtained in India.

Vizagapatam Port

When the accounts under the control of the Communications Department were examined, there was a considerable discussion on the trading and financial position of the Port of Vizagapatam. It was stated that the receipts had now increased so as to cover the ordinary working expenses, that last year there was a favourable balance of Rs. 31,000, and that no further capital expenditure would be incurred unless it could be shown to be either definitely remunerative or absolutely essential in the interests of the Port.

The value of the facilities provided was also considered, and the Committee accepted the view that at the present moment when there was every prospect of the Port being able to meet its ordinary working expenses and depreciation charges, even though no repayment of interest on capital could be made, it would be unwise to consider the question of closing the Port, but they recommended that every effort should be made to keep the expenditure at the lowest possible level so that a subvention could be paid to Central revenues as a partial payment towards the interest due on capital.

SENTINEL OF THE FRONTIER

THE SHPOLA STUPA

Repairs will shortly be undertaken by the Archæological Survey of India to the Shpola Stupa on the Khyber Pass in the tribal areas of the North-West Frontier Province.

This Stupa is one of the best preserved amongst the monuments in the Province and was lately visited by the Director General of Archæology who found it badly in need of repairs.

Built in the second century A. D. probably by the Kushan emperors, this Buddhist Stupa stands as the sentinel of the frontier on a mountain ledge overlooking the Khyber Railway and the main road through the Khyber Pass. Standing in tiers and built of fine diaper masonry, characteristic of its age, it must have constituted, when intact, one of the finest pieces of Buddhist architecture of ancient India. On a rock close by there is a shallow incision which shows the original elevation of the Stupa when it was complete with its double basement and seven umbrellas.

Raids By Afridis

Its situation in the midst of the Afridi country unfortunately made the Shpola Stupa the object of raids by the tribesmen from time to time. The interior was ransacked by Afridis in search of treasure and the surrounding tiny stupas erected by the votaries have also been considerably damaged. It is this damage which it is now intended to make good.

The Stupa stands in what was known in olden days as the Gandhara country (stretching from the Salt Range to the Hindu Kush mountains), one of the most favourite regions with Buddhists in the Kushan times.

One of the most authenticated relics of Buddha yet found was discovered at Shahji-Ki-Dheri near the city of Peshawar, where the relic was interred by the emperor Kanishka, as is now known from the inscription on the casket in which it was enclosed. This discovery was made thirty years ago and soon after the relic was made over with great ceremony to the Burmese who have since built a beautiful Pagoda over it at Rangoon.

BURMA TIN-TUNGSTEN

GEOLOGICAL SURVEY'S STUDY

A microscopic study has lately been made by the Geological Survey of India of tin-tungsten ores from Burma.

Metal tungsten is of particular value in the composition of special steels, and occurs in two minerals, wolfram and scheelite.

The ores examined by the Geological Survey of India were from the Mawchi Mine in the

Southern Shan States and the Hermyingyi Mine in the Tavoy District of Burma.

Examined under the reflecting microscope the Mawchi ores have been found to be of complex character and not easy to treat for their tin and tungsten contents, some 26 minerals being present and they are probably the most complex tin ores known. A study has been made of the relations of these minerals to each other in the ore and their structures, and important conclusions reached.

A microscopic examination of polished sections of the tin-tungsten ores from the Hermingyi Mine in the Tavoy District, has brought out certain differences between these ores and those of the Mawchi Mine to the north. The Hermingyi ores have been found to be much simpler and without that wide diversity in mineral composition which characterises the Mawchi ores. The reason, it is said, is that they were formed at a much lower temperature than the Mawchi ores. The proportion of wolfram (the ore of tungsten) to tin in the Hermingyi ores is approximately 2 to 1.

INDIAN ARMY RECRUITS IN 1937

REJECTION FIGURES ANALYSED

Eight thousand four hundred and twenty-seven recruits out of a total of 22,843 applicants for enrolment in the Indian Army during the year ended March 31, 1937, were rejected as unfit.

The percentage of rejections was 36.89 for 1936-37, while that for 1935-36 was 35.99.

The principal causes of rejection of the recruits* for the year ended March 31, 1937 were as follows :—

Disability.	Number of Men Rejected As Unfit	
	Actuals.	Percentage.
Trachoma	1,017	4.45
Disordered Action of the Heart ..	826	3.62
Otitis Media	523	2.29
Malaria (enlarged spleen) ..	522	2.29
Defective Vision	403	1.76
Valvular Diseases of the Heart ..	388	1.70
Hernia	358	1.57
Venereal Diseases	355	1.55
Skin Diseases	342	1.50
Other Deformities	335	1.47
Goitre	261	1.14
Varicose Veins	247	1.08
Tuberculosis (Pulmonary) ..	157	0.69
Other Defects	2,693	11.78
	8,427	36.89

*At recruiting Centres only.

CONCESSIONS TO PRESS CAUSE LOSS ON TELEGRAMS

That the greater part of the loss on the Telegraph Branch of the Posts and Telegraphs Department, which last year was reduced to Rs. 17½ lakhs, was on account of the concession allowed on Press telegrams, was revealed at the recent meeting of the Public Accounts Committee of the Legislative Assembly when the accounts of the Posts and Telegraphs Department were examined.

So that this aspect of the loss on telegrams, which admittedly provides a much-valued public facility, might be clearly established, the Committee desired that the figures relating to the concession rates given to 'Press Telegrams' should be verified, though they fully appreciated that the concession was justified and should be continued.

At the same time, the profit on the working of the Telephone System which had taken the natural increase that would have accrued to the Telegraph Branch, had to be considered and the Committee were of the opinion that the commercial results of both the Telegraph and Telephone Branches, which showed a net profit, should be considered together.

There was considerable discussion on the steps taken to reduce, as far as possible, the loss on the working of the Telegraph Branch. The Director-General, Posts and Telegraphs, stated that the working expenses of the Telegraph Branch had been steadily reduced during the last five years by Rs. 27 lakhs, and that further retrenchment would be a doubtful economy in that it could only be at the expense of efficiency.

The mail contract with the P. and O. Company also came in for discussion and it was stated that the payment of Rs. 28,000 a year was considerably less than what would have been made according to the International Postal Convention.

PRE-HISTORIC BURIAL GROUNDS DISCOVERY IN MADRAS

Discovery throwing considerable light on burial practices in India in pre-historic times, is reported from Madras.

A number of pre-historic burial chambers in the form of primitive stone circles and chambers embedded in the soil have lately been found by the Superintendent of Epigraphy, Archaeological Survey of India, at the pre-historic sites near the villages of Alluru and Satanikota in the Nandikotkur taluk of the Kurnool district, Madras. In a few cases the chambers are even of a composite character.

The chambers discovered at Alluru were found on a hillock called Arella-Marella-gutta; those at Satanikota were also found on a hillock which lies to the east of the village and close to the Tungabhadra river. The burial chambers at Alluru, it is said, bear close resemblance to those

found at Satanikota and at a few other sites in the Bombay-Karnatak.

To the west and south-west of Satanikota there are raised village sites locally designated "The Elephant's Fort" and the "Shepherd's Fort". These high levels are strewn over with old pottery of a red variety not used now-a-days in the locality. Villagers report that large earthen vessels and terra cotta figures of elephants, etc., discovered here some years back, were destroyed and thrown into the river.

A Lost Capital City

On a rock, in a field to the south-west of this village, there have been found epigraphs in archaic characters ranging from about the 8th and 9th centuries A.D. Some of the names suggest a Jaina origin. Traces of habitation and deserted temples have also been found in this locality.

The studies made suggest that the whole area, including the present village of Satanikota and the neighbouring mounds extending over five or six square miles, must have been an old capital. There are references to Satanikota as a military station in mediæval literature and local chronicles. But archæologists think that its antiquity goes back to the period of the Satavahanas, of whose territory Satavahanihara finds mention in an Andhra record of the 2nd century A.D. from Myakadoni (Bellary district) and Satahani-rattha in an Pallava grant of the 3rd century A.D.

MAKING YOUNG INDIA AIR-MINDED

Steps taken for the training of Indians in aviation were explained to the Legislative Assembly Public Accounts Committee when they examined the accounts under the control of the Communications Department, Government of India.

The system of selecting Indians and sending them to England for training for a period from 2½ to 3 years, after which they are appointed as Assistant Aircraft Inspectors, was explained. Selected representatives are taken in addition, from the workshops, and, after they had obtained their Ground Engineers' Certificate, are sent to England for training as Examiners; on completion of the training they have opportunities of promotion to the upper grades of the Aircraft Inspectorate.

Earmarked Fund For Training

The special grants-in-aid from the additional tax on petrol consumed for aviation purposes also came in for some discussion. It was explained that the fund was devoted to the grant of scholarships for research purposes and for training persons outside the Civil Aviation Department through subsidies to Flying Clubs. The Committee recommended that the amount available from the petrol tax should be voted to a special earmarked balance in the Road Fund, and that the expenditure found desirable should be met from this balance and should not have to be voted separately each year.

RELIC OF THE BUDDHA

DISCOVERY IN MADRAS

Construction is nearing completion of a museum sanctioned by the Government of India at Nagarjunakonda in Madras Presidency, which will house the remarkable series of reliefs found there, following excavations carried out by the Archaeological Survey of India.

A number of monasteries, temples, stupas, inscriptions, coins and a large collection of magnificent bas-reliefs of the Amaravati School have been discovered.

Situated on the right bank of the Krishna river, in the Palnad Taluk of the Guntur District of the Madras Presidency, this ancient Buddhist site is known as Nagarjunakonda or Nagarjuna's Hill and bears the name of the great Buddhist savant, who was amongst the earliest of the teachers of the Mahayana cult of Buddhism, still observed in Tibet.

According to Tibetan tradition, Sri Parvata is the name of the place where the great philosopher spent the latter part of his life. The inscriptions found there show that the ancient name of this locality was Sri Parvata, so that its identification is complete.

From inscriptions it appears that most of the monuments at Nagarjunakonda were set up by certain royal ladies of the Southern Ikshaku dynasty, which ruled in the Andhra country in the second and third centuries A.D. Some of the temples and monasteries were dedicated to the fraternities of Ceylonese monks residing at the place, a fact which shows that in the early centuries of the Christian era there was considerable intercourse between the Buddhists of Ceylon and those of the Andhra country.

Inscriptions belonging to the Great Stupa at Nagarjunakonda record that this monument had been consecrated by the deposit of a relic (*dhatu*) of the Buddha himself.

This relic was discovered in a tiny round gold box, together with a few gold flowers, pearls, garnets and rock-crystal beads. It has since been handed over by the Government of India to the Maha Bodhi Society for enshrinement in the Mulagandhakuti Vihara at Sarnath, near Benares.

Some of the smaller stupas were ornamented with carved marble slabs, of which some 200 pieces have been recovered similar to those obtained from the famous Amaravati stupa. The scenes depicted in the bas-reliefs represent episodes from the life of the Buddha, the stories relating to the previous births of the Great Teacher or other Buddhist legends. Some of these scenes have not been met with before in Buddhist art and their identification was, therefore, a matter of some difficulty.

An Illustrated Memoir

The Archaeological Survey of India has now brought out a profusely illustrated Memoir, en-

titled "The Buddhist Antiquities of Nagarjunakonda", in two parts, the first containing an account of the locality, history, buildings, sculptures and other antiquities discovered during the excavations, and the second giving a description of the more difficult scenes portrayed in the bas-reliefs.

The author is Mr. A. H. Longhurst, at present Archaeological Commissioner in Ceylon, but formerly Superintendent, Archaeological Survey of India, Southern Circle, who was also responsible for the excavations at the place. The second part of the Memoir has been written, at Mr. Longhurst's request, by Dr. S. Paranavitana of the Archaeological Survey of Ceylon.

REFORMS IN INDIAN STATES

PARAMOUNT POWER'S ATTITUDE

In response to requests from newspapers we here reproduce for reference record a question and answer given in the House of Commons on February 21, 1938, together with an extract of a *Times* leading article referring to them.

In the House of Commons, Capt F. F. A. Heilgers (Con.—Bury St. Edmunds) asked the Under-Secretary of State for India whether his attention had been drawn to a public statement of the Dewan of Travancore to the effect that the power of a Ruler of an Indian State to grant measures of responsible government is restricted by the necessity of obtaining the explicit consent of the Paramount Power.

Capt. Heilgers also asked what was the policy of the British Government on this matter.

Earl Winterton, replying on behalf of the Under-Secretary of State for India, said: "I have seen a report of that statement. It is not the policy of the Paramount Power in ordinary circumstances to intervene in the internal administration of full-powered States. In particular I can assure Capt. Heilgers that the Paramount Power would certainly not obstruct proposals for constitutional advance initiated by the Ruler. The consent of the Paramount Power has not been required before when such advances have been approved by various Princes, nor, so far I am aware, has it been sought in such matters. The Paramount Power would, in ordinary circumstances, confine itself to tendering advice when consulted."

The Times, in a leader, says that both the present setback to provincial autonomy (a temporary setback, as it may be hoped) and the current controversies in India on Federation, made it desirable for the authoritative contradiction in Parliament yesterday of an allegation likely to prejudice progress with the Federal plan. It is to the advantage of India as a whole that Ruling Princes, on their own initiative and in response to public opinion, should be just, efficient and progressive in the exercise of their internal independence.

KING EMPEROR'S ANTI-TUBERCULOSIS FUND

OVER HALF A CRORE OF RUPEES

How Will The Money Be Spent ?

The subscriptions actually received in response to Her Excellency the Marchioness of Linlithgow's Appeal for the King Emperor's Anti-Tuberculosis Fund, now total Rs. 51,16,968.

Although this is less than half the amount at which Her Excellency Lady Linlithgow aims, it is nevertheless a clear indication of the generous sympathy which the people of India feel for those afflicted with tuberculosis. As the Fund is to remain open for another six months it is hoped that the full total will quickly be reached. The need is great, and every rupee given will be required if an efficient campaign against tuberculosis is to be made possible.

Those who have already subscribed to Her Excellency's appeal as well as those who have not yet done so, will want to know how the money will be spent.

Some apparently are under the impression that it is all to go on expensive buildings, and on hospital and other accommodation for patients in advanced stages of the disease. That this is incorrect is shown in a note suggesting the lines on which expenditure might best be directed, which has just been issued for their guidance to all Provincial Appeal Committees.

The note lays particular stress on preventive, as opposed to purely curative, measures and suggests that as much as 75 per cent of all the money available in each Province and Indian State should be spent on prevention.

Everyone must sympathise with those in whom the disease has developed, but it is the spread of infection which constitutes the greatest menace, for it is quite possible to have the disease and to be passing it on to others without being aware of its presence.

The first step in the campaign must be to check this spread by bringing every case under observation and treatment as quickly as possible, because tuberculosis is definitely curable if taken in hand early enough.

In order to do this the note suggests that the first essential is to provide in as many centres as possible a tuberculosis dispensary or clinic, with its staff of home visitors both paid and voluntary.

The modern clinic does not only deal with those who come for advice, but its attached workers visit the homes of its patients in order to find out if other members of their families have become infected. In this way totally unsuspected sources of infection will be brought to light and can be dealt with.

Not only is the clinic the most practical means of getting into contact with fresh cases, but it also provides the most economical method of dealing with them. It is hoped that in most districts throughout India there will be enough money to provide at least one clinic at every district headquarters; this hope will of course only be realised if every citizen subscribes as liberally as he can to the King-Emperor's Fund.

Later, as funds permit—and also as a result of further enthusiastic help when plans take shape—the hope is that it will be possible to spend more time and money on establishing hospital-wards and sanatoria for the treatment of cases requiring the care and attention provided by such places. How soon this stage will be reached in the fight against tuberculosis, again must depend on the response made to Her Excellency's appeal.

“ After Care ”

Until sufficient beds can be provided in general hospitals and in special tuberculosis institutions, what is known as domiciliary or home treatment must be mainly relied upon, this will be supervised by the home visitors attached to the clinics. At a later stage after-care committees will continue to keep in touch with ex-patients, because these individuals still need help and guidance while they are trying to fit themselves once more into the normal life of the community.

In order to put these plans into effect it will be necessary to train preventive staffs, and this will be one of the first and more important responsibilities both of the Central and the Provincial Anti-Tuberculosis Fund organisations. In addition, the co-operation of the entire medical profession will be required and it is believed that this will, as usual, be readily forthcoming.

Tuberculosis can be controlled; but this cannot be done in a day, nor without a combined effort. A beginning has to be made somewhere, and it is hoped that The King Emperor's Fund will be the means of showing how this beginning can be made.

Each individual subscription will help to make success more sure. In any case, it is certain that every rupee will be wisely spent.

Those who have not subscribed—perhaps because they did not know how urgently money was required—will perhaps do so now. And if anybody likes to subscribe a second time nobody will stop him.

FOURTEENTH SUBSCRIPTION LIST

Total amount previously acknowledged :
Rs. 44,12,919-2-1.

Assam :—Through Provincial Organisation,
Rs. 15,000-0-0.

Bengal :—Through Provincial Organisation,
Rs. 19,415-10-1 ; 1st Bn., 10th Gurkha Rifles, Loralai
(For expenditure in Darjeeling Dist.), Rs. 100-0-0.
Total :—Rs. 19,515-10-1.

Bihar :—Through Mr. L. K. Jha, I.C.S., Hazari-
bagh, Rs. 264-2-0.

Bombay :—Through Provincial Organisation,
Rs. 80,000-0-0 ; Mr. Bhat Trimbak Sadashiv, Taluka
Malwan, District Ratnagiri, Rs. 5-15-0 ; Mamlatdar,
Taluka Ranebennur, Rs. 128-0-0. Total :—
Rs. 80,133-15-0.

Delhi :—Messrs. Army and Navy Stores, Ltd., New
Delhi, Rs. 100-0-0 ; Mr. Faqir Mohd., Punjabi Tailor
Master, Delhi, Rs. 10-0-0 ; Through Provincial Organi-
sation, Rs. 500-0-0. Total :—Rs. 610-0-0.

N.-W. F. Province :—Through Provincial Organisa-
tion, Rs. 3,214-0-0.

Orissa :—Through Provincial Organisation,
Rs. 3,500-0-0.

Punjab :—Mr. Behari Lal Kapur, Amritsar,
Rs. 500-0-0 ; Miss C. B. Tod (Simla Hills), Rs. 20-0-0 ;
Through Provincial Organisation, Rs. 45,000-0-0 ;
Lady Mitter, Simla, Rs. 100-0-0 ; Central M. T.
Stores Depôt, Chaklala, Rs. 66-9-0 ; General Sir John
Coleridge and Staff of Headquarters, Northern Com-
mand, Murree, Rs. 400-0-0. Total :—Rs. 46,086-9-0.

United Provinces :—Through Deputy Commis-
sioner, Naini Tal, Rs. 320-15-3 ; Through Provincial
Organisation, Rs. 22,500-0-0. Total :—Rs. 22,820-15-3.

Baluchistan :—K. E. Anti-Tuberculosis Fund,
Baluchistan, Rs. 3,608-0-0 ; Zhob (Ind.) Brigade
Area, Loralai, Rs. 255-14-0. Total :—Rs. 3,863-14-0.

Kolhapur Residency Area :—Collections made in
the office of the Kolhapur Residency, Rs. 148-8-0.

Hyderabad British Administered Area :—K. E.
Anti-Tuberculosis Fund, Secunderabad, Rs. 105-8-6.

Coorg :—K. E. Anti-Tuberculosis Fund, Coorg,
Rs. 230-2-6.

Centre :—Mr. Quilina Cardoso, Parish of Loutulim,
Nova, Goa, Rs. 5-0-0.

States :—Rao of Jigni State, Rs. 15-0-0 ; Jaora
Darbar, Rs. 77-13-9 ; Indore, Rs. 9,139-2-3 ; Orchha,
Rs. 49-8-0 ; Dhar, Rs. 580-0-0 ; Baramba, Rs. 310-1-0 ;
Chhuikhadan, Rs. 21-4-0 ; Sachin, Rs. 2,042-0-0 ;
Pudukkottai, Rs. 16,352-14-8 ; Dujana, Rs. 342-8-0 ;
Jodhpur, Rs. 5,943-2-6 ; Jaipur, Rs. 1,100-1-3 ; Dholpur,
Rs. 246-0-0 ; Alwar, Rs. 10,000-0-0 ; Manavadar,
Rs. 377-0-0. Total :—Rs. 46,596-7-5.

Grand Total :—Rs. 46,55,013-13-10.

FIFTEENTH SUBSCRIPTION LIST

Total amount previously acknowledged :
Rs. 46,55,013-13-10.

Bengal :—Through Provincial Organisation,
Rs. 15,512-8-1.

Bombay :—Treasury Officer, Dharwar, Rs. 261-1-0 ;
Indian Marathi Congregation of the Church of the
Holy Name, Poona City, Rs. 10-0-0 ; Mamlatdar,
Taluka Ranebennur, Rs. 55-0-0 ; Through Provincial
Organisation, Rs. 25,000-0-0. Total :—Rs. 25,326-1-0.

Delhi :—Mr. M. B. Coburn, O.B.E., Simla (6th
instalment), Rs. 5-0-0.

Madras :—Through Provincial Organisation,
Rs. 30,000-0-0.

N.-W. F. Province :—Through Provincial Organisa-
tion, Rs. 1,952-0-0.

Orissa :—Through Provincial Organisation,
Rs. 6,000-0-0.

Punjab :—The Uniacke Residential Club, Murree
(proceeds of concerts), Rs. 32-0-0.

United Provinces :—Through Provincial Organisa-
tion, Rs. 21,000-0-0.

Baluchistan :—K. E. Anti-Tuberculosis Fund, Balu-
chistan, Quetta, Rs. 10,540-0-0.

Baroda Administered Area :—Deputy Superintend-
ent of Police in charge, Gujarat States Agency Police
District, Baroda Camp, and his staff, Rs. 125-12-0.

Centre :—The Assistant Commissioner, Kohat, on
behalf of the Central Excises and Salt, Northern
India, Rs. 797-0-0 ; Deputy Commissioner, Central
Excises and Salt, Calcutta, Rs. 296-1-6 ; The Indian
Transcontinental Airways, Ltd., Rs. 750-0-0 ; Sir
Ernest Burdon, K.C.I.E., C.S.I., I.C.S. (proceeds of
the sale of a carpet), Rs. 751-0-0 ; Mr. Quilina
Cardoso, Parish of Loutulim, Goa, Rs. 5-0-0. Total :—
Rs. 2,599-1-6.

States :—Alirajpur, Rs. 4,900-0-0 ; Beri Jagir,
Rs. 135-3-0 ; Charkhari, Rs. 200-0-0 ; Barwani,
Rs. 118-6-6 ; Jaora, Rs. 86-0-9 ; Kurundwad (Senior),
Rs. 100-0-0 ; Bonai, Rs. 50-0-0 ; Kanker, Rs. 321-3-0 ;
Narsingpur, Rs. 65-11-3 ; Jashpur, Rs. 115-0-0 ; Sachin,
Rs. 51-0-0 ; Raja Saheb of Chhota Udepur, Rs. 4,000-0-0 ;
Jind, Rs. 2,107-1-3 ; Rawingarh, Rs. 10-0-0 ; Dhami,
Rs. 500-0-0 ; His Highness the Raja Sahib of Suket
(part subscription), Rs. 3,000-0-0 ; Kotah,
Rs. 2,270-13-0 ; Kishangarh, Rs. 6,000-0-0 ; Partab-
garh, Rs. 1,235-4-0 ; Jaipur, Rs. 18-0-0 ; Karauli,
Rs. 13,200-0-0 ; Limbdi, Rs. 526-7-0. Total :—
Rs. 39,010-1-9.

Grand Total :—Rs. 48,07,116-6-2.

SIXTEENTH SUBSCRIPTION LIST

Total amount previously acknowledged :
Rs. 48,07,116-6-2.

Assam :—Through Provincial Organisation,
Rs. 9,000-0-0.

Bengal :—Through Provincial Organisation,
Rs. 14,884-4-0.

Bihar :—Through Provincial Organisation,
Rs. 18,401-2-5.

Bombay :—Through Poona District Organisation,
Rs. 4,119-11-0.

Madras :—Through Provincial Organisation,
Rs. 45,000-0-0.

Orissa :—Through Provincial Organisation,
Rs. 15,500-0-0.

Punjab :—Through Provincial Organisation,
Rs. 40,000-0-0 ; The Uniacke Residential Club, Murree
(Half the proceeds of the concert given by the Band
of the 2nd Battalion, The Highland Light Infantry),
Rs. 20-0-0. Total :—Rs. 40,020-0-0.

Baluchistan :—K. E. Anti-Tuberculosis Fund,
Baluchistan, Rs. 500-0-0.

Hyderabad British Administered Area :—K. E.
Anti-Tuberculosis Fund, Secunderabad, Rs. 250-0-0.

Centre :—The Administrative Officer, Salt Range
Division of the Central Excises and Salt Department,
Khewra, Rs. 801-12-0 ; The Commissioner, Central
Excises and Salt, Northern India, Delhi, Rs. 253-0-0.
Total :—Rs. 1,054-12-0.

States :—Jobat, Rs. 229-10-6 ; Samthar, Rs. 600-0-0 ;
Sitaman, Rs. 150-0-0 ; Mudhol, Rs. 653-7-0 ; Pal Lahara,
Rs. 200-0-0 ; Chhuikhadan, Rs. 48-3-0 ; Bastar State—
Mr. E. S., Hyde, I.C.S., Administrator, Rs. 30-0-0 ;
Sachin, Rs. 191-0-0 ; Mysore, Rs. 1,26,458-2-8 ; Mandi,
Rs. 1,669-11-9 ; His Highness the Raja Sahib of
Suket State (Part Subscription), Rs. 1,000-0-0 ;
Kapurthala, Rs. 638-3-0 ; Jind, Rs. 1,001-10-0 ;
Jodhpur, Rs. 3,966-12-0 ; Jaipur, Rs. 1,285-10-3 ;
Gondal, Rs. 3,000-0-0 ; Through Western India States
Agency Organisation, Rs. 20,000-0-0. Total :—
Rs. 1,61,122-6-2.

Grand Total :—Rs. 51,16,968-9-9.

Bengal Still Ahead

The progressive totals of the amounts
credited to the Central Account at New Delhi in
respect of the various Provinces are pub-
lished below :—

Assam : Rs. 62,700-0-0 ; Bengal : Rs. 3,86,720-12-2 ;
Bihar : Rs. 32,177-1-2 ; Bombay : Rs. 3,30,494-3-3 ;
Central Provinces and Berar : Rs. 36,489-10-3 ; Delhi :
Rs. 70,026-9-0 ; Madras : Rs. 3,15,225-2-0 ; N.-W. F.
Province : Rs. 37,428-9-9 ; Orissa : Rs. 35,579-0-0 ;
Punjab : Rs. 3,38,113-0-6 ; Sind : Rs. 28,385-2-0 ;
United Provinces : Rs. 1,25,342-11-3.

FEDERAL PUBLIC SERVICE COMMISSION

MINISTERIAL EXAMINATION CHANGES

The Government of India have decided to make the following changes in the examinations for recruitment to the Ministerial Service of the Government of India Secretariat which will henceforth be divided into two grades, namely Assistants and Clerks.

No examination will be held in 1938 for recruitment to the existing first and second Divisions. In the case of Assistants, the changes described below will take effect from the next examination. In the case of the clerical grade they will take effect from the examination to be held after that already announced for 1938.

In both examinations in future age on the 1st July of the year in which an Examination occurs will determine a candidate's eligibility by age.

ASSISTANTS.

With effect from the next examination to be held for recruitment to this grade the age-limits will be fixed at not less than 20 and not more than 22. The following will be the subjects for the examination :—

A. Obligatory.

- (i) English Essay, (ii) Precis Writing, (iii) Drafting, (iv) Arithmetic, (v) General Knowledge, (vi) The General and Economic Geography of India.

B. Optional.

Only two subjects to be chosen out of the following :—

- (i) English (Language and Literature), (ii) Political Economy, (iii) Political Science, (iv) Modern History, Indian, with special reference to modern constitutional developments, (v) Modern History, General, of the 19th and 20th centuries, (vi) Mathematics, (vii) Physics, (viii) Chemistry.

CLERKS.

The maximum age-limit for candidates for this grade will be reduced gradually to 19 as indicated below :—

23 in 1938, 21 in 1939, 20 in 1940, 19 in 1941 and thereafter.

The minimum age-limit will remain unaltered at 17.

With effect from 1939, the following will be the subjects for the examination :—

- (a) Arithmetic, (b) General Knowledge, (c) English Composition including the usual tests and a simple precis, elementary tabulation to test candidates in the art of compiling, arranging and presenting data in tabular form and a simple draft.

For the present the educational qualifications for admission to the Assistants' and the Clerks' Grade Examination will be those prescribed for admission to the I and II divisions and the Typist and Routine Grade Examination, respectively, as announced in the Commission's notices. There will be no separate test in handwriting for either of the examinations, but bad handwriting will be penalised by a suitable reduction of the candidate's marks.

Candidates who are selected for appointment on the results of the examination for Clerks will be required to pass a test in Typewriting to be conducted by the Federal Public Service Commission.

Detailed rules relating to these examinations together with a detailed syllabus for each will be issued in due course.

For Service In Empire's Scientific Life

(Continued From Page 73.)

therefore, make their influence felt in both the academic and industrial life of the Empire. The results of the actual working of the scheme have amply justified these bold aspirations. The Commissioners proudly record that the number of their scholars has risen to six hundred and their outstanding contributions to the progress of science lead them to believe that the maintenance of the number at the maximum is a work of national and Imperial importance.

The list of former holders of awards includes a number of the most eminent British scientists, and no fewer than forty of these have already been elected to Fellowships of the Royal Society. A Nobel Prize for Physics is also among the distinctions won by these scholars.

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AMA.7.37.	Annual Report of the Agricultural Marketing Adviser and Summarised Reports of Senior Marketing Officers in Provinces and certain States for the year ended December 31, 1937	As. 6 or 8d.
	BHITA—	
PR.B.34 [N].	Report by the Hon'ble Sir John Thom on the cause of the Railway Accident near Bhita on the East Indian Railway on July 17, 1937	As. 4 or 5d.
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EC.1.36.	1935-36	Re. 1-14 or 3s. 3d.
	EFFECT OF LEGISLATION—	
LD.11.36.	1936	Re. 1-10 or 2s. 9d.
	FINANCE AND REVENUE ACCOUNTS—	
AG.13.37.	1936-37	Rs. 10 or 16s. 6d.
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CA.11.	1938	As. 4 or 5d.
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HC.1.10.	No. 10.—Synoptic Table for the Identification of the Anopheline Mosquitoes of India. (Revised and Enlarged). Third Edition, 1938	As. 5 or 6d.
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FP.1.	Third Edition, 1937	Rs. 9-8 or 16s.
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Indian Information Series

VOL. III

Simla, September 1, 1938

No. 15

CONTENTS

	Page		Page
India's Population	89	Calcutta Shortwave Station	99
All-India Cattle Show	92	The Satpuras	101
Research for Farmers	93	A Snail's Age	101
Anti-T. B. Subscription List	94	Press Telegrams	101
Rural Reconstruction	95	Assembly Questions and Answers—	
Women in Mines	96	Burma Riots	102
Cattle Contagion's Toll	97	Arabic Students	102
Central Opium Board	98	Jiwani Seaplane Station	103
Dried Skimmed Milk	98	Anti-Malaria Campaign	103
Lord Brabourne	98	Aeroplane Construction	103

INDIA'S POPULATION STILL GROWING

Rural Health Needs

STATISTICS TELL THEIR TALE

Annual Health Report

The population of India, as a whole, is likely to reach about 400,000,000 by 1941, says the Public Health Commissioner in his Annual Report for 1936.

Since 1931, when the last census was taken, India has remained comparatively free from violent outbreaks of epidemic diseases and the annual balance of births over deaths has been consistently favourable to progressive increase of population. During 1936, the number of births was nearly 280,000 higher than in 1935. On the other hand, the number of deaths was less by about 200,000, so that the estimated population for 1936 shows an increase of about 3,600,000, as compared with that of the previous year, and stood at about 282,000,000.

Between the census of 1931 and June, 1936, the actual increase has been 6.1 per cent. Assuming the same rate of growth during the next five years, the increase in population during the decennium 1931-41 is, therefore, likely to be something over 11 per cent and the total population nearly 400,000,000.

In trying to estimate the possible trend of events in India, consideration must be given to a number of important factors which include the low standard of life of the majority of the people, the large additions to numbers amounting at present to about 35 to 40 millions per decade, the high toll of life and suffering taken

annually by epidemic and other preventable diseases and lastly the question of food production.

More And Better Food

Statistics show that, during 1936-37, of the area cultivated in British India, the net area actually sown was about 232 million acres, while the current fallows were over 49 million acres.

Of the area uncultivated 154 million acres was culturable waste other than fallow, and 155 million acres was not available for cultivation. The total area under food crops was

about 217 million acres, of which a little more than 204 million acres was under food grains and the balance under other food crops. A comparison of these figures with those for 1935 shows that increases were recorded in every province.

The application of the results of agricultural, irrigation and veterinary research to the country's problems is gradually being extended, both at the Centre and in the provinces, and is already bearing fruit.

Agricultural research, for example, has within recent years covered a wide field, such as protection of crops from pests and diseases, irrigation and fertilizers, soil examination and what is even more important, the question of co-ordination of agricultural and nutritional studies for the improvement of human nutrition, is now being actively pursued.

Nutrition Studies

The nutritional studies, which have been carried out during the past two or three years, have been mainly concerned with :—

- (i) dietetic surveys in order to ascertain the actual state of nutrition of the people ;
- (ii) analyses of common Indian food-stuffs for the purpose of determining nutritional value ;
- (iii) experimental work in controlled institutions in India for the discovery of suitable cheap methods of improving nutrition ; and
- (iv) training of medical and public health personnel in general nutrition work and in the carrying out of propaganda on the same subject.

A study has recently been made at the Nutrition Research Laboratories, Coonoor, of the food supply and the nutritional requirements of the population of Madras province, and the conclusion reached that the food available is just sufficient to cover the energy needs of the people, provided it is evenly distributed and that the average diet, which consists, mostly of cereals, is lacking in animal protein, mineral salts and vitamins, which are so essential for the proper physical functioning of the body. Milk, eggs, fish and meat would supply the required animal protein, whilst green vegetables and food provide essential vitamin and mineral salts. These articles, which have been termed "protective foods" are, however, relatively more expensive than cereals and ordinarily they are eaten in very small quantities or entirely absent from the diet.

These investigations are of particular value because they attempt to assess the actual position of the population's nutritional requirements, which include the provision of an adequate quantity and quality of food ; and they apply equally to most parts of India. The investigations have demonstrated a widespread prevalence of sub-normal nutrition. The urgent need at present appears to be to discover means whereby the production of "protective foods" can be greatly increased and their consumption encouraged.

How Research Is Helping

The general poverty of the Indian masses makes it essential to explore every available method, which will help to decrease the present mal-nutrition. Recent researches in the Nutrition Research Laboratories in Coonoor have shown that, for such an essential article of diet as milk, substitutes, such as calcium lactate, may be employed which may be well within the means of a large section of the community, since the amount sufficient for a child costs only half an anna per month.

Experiments have also shown that a good supply of vitamin A, the deficiency of which in the Indian diet is responsible for much of the prevalent ill-health and mal-nutrition, can be had in red palm oil, derived from the fruit of a west African palm, at a third of the cost for which it is purchaseable in the form of cod liver oil.

A small, but successful, experiment in the cultivation of the red palm has been carried out in Negapatam in South India. The climate of certain parts of South India approximates closely to Malaya, where the palm is grown extensively, and if it can be successfully cultivated in these areas, the supply of cheaper vitamin A so obtained would be of the greatest advantage to India.

The Children Who Die

Live births recorded in British India during the year were nearly 10,000,000, the rate per mille being 35.4. Male births were a little over 5,000,000 ; the number of males born per hundred females was 108. Male births outnumbered female births not only in British India as a whole, but in every province. This phenomenon is common to most countries, but in other parts of the world, the ratio is usually about 106 males to 100 females.

The birth rate per mille based on married female population between the ages of 15 and 40 in British India is 212.5. This figure is almost double of that in England and Wales, where it is only 111.9. The high fertility rate in this country has, therefore, a close bearing on the growth of population in spite of the fact that mortality rates remain at a high level.

Deaths during the year were nearly 6,500,000. Throughout India during 1936, conditions were relatively healthy. The death rate works out at 23 per mille ; or 1 per mille less than for 1935 ; the male and female death rates were 23.0 and 22.2 respectively.

The infantile mortality rate for British India was 162 per mille.

Male infantile deaths were 170.9 per mille and female infantile deaths 153.1, and the still births recorded were 21.2 per mille of live births.

Of 46 countries of the world for which the infantile mortality figures are available, 40 recorded in 1935 rates lower than that of India, the remaining five being the Strait Settlements, Rumania, Chile, Ceylon and Malta. The range of variation in the infantile

mortality rates lay between 32 per mille for New Zealand and 286 per mille for Malta, whilst nearly half of the forty countries recorded rates over 50 per cent lower than that of India. This comparison indicates how far behind India is in regard to measures for the protection of infant lives.

Statistics reveal that about 47 per cent of the total infantile mortality in British India takes place within the first month of life. The subsequent periods 1 to 6 months and 6 to 12 months are relatively less fatal. Infant mortality during the first month of life is largely dependent on factors influencing ante-natal life, particularly so in the case of deaths within the first week. During 1936, the deaths under one week formed 28 per cent of the total infantile mortality and 60 per cent of the deaths within one month.

How India Compares

A study of the mortality figures for British India shows that about 49 per cent of the total mortality in a year is among those people who are ten years of age, whilst the corresponding figure for England is only 12 per cent.

During the first year of life India's proportionate mortality is about three and a half times that of England. At the next period, between 1 and 5 years, it is five times greater and between 5 and 10 years, it is three times as high. About 25 per cent of the total deaths were among infants under one year, the English figure being about 7 per cent.

Another significant fact is that whilst, in England, women have lower mortality rates than men at all ages, in India the female death rate exceeds that of the male during the reproduction years, 15-40.

The following is a comparative table, giving the birth, death and infantile death rate per mille for several countries of the world :—

	Birth rate per mille.	Death rate per mille.	Natural increase per mille.	Infantile death rate per 1,000 births.
British India	35.4	22.6	12.8	162
England and Wales	14.8	12.1	2.7	59
Federated Malay States	38.7	19.2	19.5	142
Japan	29.9	17.5	12.4	117
Palestine	44.9	16.1	28.8	122
Egypt	41.8	27.3	14.5	164
Scotland	17.9	13.4	4.5	82
Australia	17.1	9.4	7.7	41
Canada	20.0	9.7	10.3	66
New Zealand	16.6	8.7	7.9	31
Union of South Africa (White)	24.2	9.6	14.6	59

Blindness

The number of blind persons in India, according to the 1931 census, was about 600,000, but probably this figure was a gross underestimate.

The main causes of blindness in this country, according to the Professor of Ophthalmology in Madras Medical College, are :—

(a) in children, keratomalacia, ophthalmia neonatorum, congenital syphilis and hereditary blinding diseases ;

- (b) in adults, cataract, various optic nerve diseases (mainly syphilitic), ulcers of the cornea, glaucoma and trachoma ; and
- (c) in children and adults, irritant remedies and small-pox.

The Director of Nutritional Research has shown conclusively that keratomalacia is due to certain deficiencies in diet. During recent years a great deal of investigation has been done in diet deficiencies, and if only these results could be applied in practice, much

blindness could easily be prevented. For small-pox, another important cause of blindness there is an excellent preventive weapon in vaccination but, says the Public Health Commissioner, only too frequently does one still find small-pox among children ending in complete or partial blindness because of the ignorance and carelessness of the parents.

Essential preventive needs include (a) a considerable expansion of the rural medical services whereby the expert instruction received at the Ophthalmic teaching centres in the Medical Colleges and Schools can be rendered readily available ; and (b) extension of the maternity and child welfare work in the rural areas.

Attention is drawn in the Report to the great defects in the compilation of the vital statistics of India and suggestions are made for their improvement. In a number of provinces urgent need exists for the formation of a bureau of vital statistics in the office of the Director of Public Health, since all public health and medical activity, if it is to be properly assessed, must be based on reliable statistics.

The solution of the problems arising out of physical health and social environments is complicated in India, says the Public Health Commissioner, by the evil of ignorance and poverty to which is commonly added a fatalistic outlook. "Nothing is more certain than the fact that the physical advancement and health of mankind is dependent not upon a 'doctor's stunt' here or a 'sanitary institution' there, but upon the whole social environment and evolution of the people".

Until further scientific investigations, says the Public Health Commissioner, have been carried out, and the lessons to be learnt from these investigations are applied in practical form for the betterment of public health, it will be profoundly difficult to create and maintain conditions essential to a healthy life. The main task lying before the Indian Governments is the reorganisation of rural life.

But no progress is likely to be made unless the agencies that work, whether governmental or non-official, secure the villagers' active co-operation.

This co-operation can only be obtained through preliminary educational work directed towards developing the villager's interest in schemes for his betterment. Successful preliminary work of this kind will make further advance possible to the formation of village organizations, such as Health Leagues, with membership open to all and contributions permitted both in money and free labour.

NEXT ALL-INDIA CATTLE SHOW

Rs. 14,000 IN PRIZES

The All-India Cattle Show Committee is to be constituted on a more permanent basis so that continuity of effort may be maintained. The Committee will have representatives of all interests concerned and will be registered as a Society.

The All-India Cattle Show held in Delhi in February last, was organised by an *ad hoc* Committee, and a special grant was made by the Government of India. The next Show will be held in New Delhi from February 13 to 18, 1939, and in order to maintain the interest in the improvement of cattle created by the last Show, the Government of India have sanctioned another grant.

A small Executive Committee has already made a beginning with the necessary arrangements, and concession rates on the railways for animals sent to the Show is already under consideration.

It is hoped to issue the prospectus of the next Show shortly. The prospectus will, in many respects, follow the one issued on the last occasion, but certain new classes have, it is understood, been introduced.

As on the last occasion, a large number of challenge cups will be offered for the various breeds ; for private breeders there will be as many as 200 cash prizes in addition to the cups. The cash prize for a private breeder, who wins a championship, will be Rs. 150. The Cup for the best animal in the Show, presented by His Excellency the Viceroy, will again be for competition, accompanied by a cash prize of Rs. 250. The total sum to be distributed in prizes is expected to amount to about Rs. 14,000.

Free Rations

Facilities to be provided for exhibitors include accommodation for animals and their attendants and free rations of grain and fodder to all animals admitted to the Show. Exhibitors, who wish to offer their cattle for sale after the Show, will have special provision made for them. Stands will also be provided for exhibits of agricultural machinery, dairy plant, seeds, manures, etc., as well as for demonstrations by Provincial Governments and Research Institutes.

The daily entrance fee has been fixed at 8 annas only, but a season ticket will be available at Re. 1-8-0. Entry to the cattle-yard will, however, be free ; a small fee will be charged for admission to the judging ring.

The Office of the Secretary, All-India Cattle Show Committee, which is now located in the 'Rock House', Simla, will, it is understood, be shifted after October 15, 1938, to the Office of the Imperial Council of Agricultural Research, Secretariat Buildings, New Delhi.

SIMPLIFYING RESEARCH FOR FARMERS

Transformation Of Co-operative Movement

SUMMER SCHOOLS AND VILLAGE GUIDES

Demonstrations On Ryots' Own Fields

Bringing research results home to the cultivator by working them out on his own field, training village "guides", extending the spheres of co-operative societies and giving adults practical education on Government farms, were some of the matters discussed by the Joint Committee of the Governing Body and the Advisory Board of the Imperial Council of Agricultural Research at its meeting in Simla on July 4, 1938, in which Ministers of Agriculture from most of the provinces took prominent parts.

In a report on the improvement of research methods, Sir John Russell suggested that means should be found to make the research results of the Government experimental stations known widely to the ryot in the field.

There are three stages in agricultural improvement :—

- (1) experimentation and research ;
- (2) working out research results on Government experimental farms ; and
- (3) getting the cultivator to adapt these methods to his daily work.

The Joint Committee unanimously accepted Sir John Russell's recommendation. Provincial Ministers have already taken further steps in their own provinces to bridge the gap because, as agriculture is a provincial subject, it is their ultimate responsibility. It was suggested that the Imperial Council of Agricultural Research should, however, undertake to distribute information and co-ordinate effort by joint planning with the provinces in three ways :—

By examining the propaganda methods adopted in the provinces as well as abroad, and evaluating them in the light of its own experience ;

By bringing to the notice of each province the methods followed in others, and abroad. Each province could then adapt them to its own conditions ;

By promoting and assisting experiments in new propaganda methods.

Actual demonstration on the cultivators' own fields was considered still to be the most telling and successful method, which has been carried out for years by all the provinces. It was decided to consider means of extending it.

Co-operative Societies In New Garbs

It was agreed that there should be a much greater development of the non-credit aspects of the Co-operative movement. Many provinces contemplated an increase in the number of societies devoted to the improvement of cattle, and to better farming and better living.

The present Journal of Agriculture and Livestock in India is to be improved. It will

contain more instructional articles on agricultural methods written in simple style, notes on marketing and current prices of pedigree stock.

Indian language translations by the Imperial Council of Agricultural Research, however, were considered impossible in view of the diversity of languages.

The journal is to be as cheap as possible and to be distributed as widely as finances permit. Its articles could serve as a basis for talks to the cultivators, and could be translated both by Provincial Governments and by the general press to whom permission to reproduce would be freely given.

Breeding of cattle and distribution of seeds were discussed. The Council has already been doing work on the pedigree registration of milch breeds in India ; it was decided to extend the system to draught breeds and to assist in the establishment of milk recording societies in the provinces.

The recommendations of the Cattle Conference held last year were considered in the light of Dr. Wright's report on the improvement of Dairy Industry in India and no alterations were found necessary.

At a Government farm near Agra, it has been found that by adopting mixed farming as high a yield was obtained from two-thirds of an area of 50 acres under cultivation as was got previously from the whole area ; the remaining third was devoted to special fodder crops for milch cattle kept on the farm ; fertility was thus improved and the milk and ghee were a clear gain.

It was suggested that the Imperial Council of Agricultural Research should assist in experimenting with such farms all over India. Help was required because these farms will necessarily be small and unable to maintain the trained assistant required for proper experiment and demonstration.

Indian "Virginians"

A review of the extensive work being done on seed production led to the decision that special attention should be given to the production of tobacco and berseem seeds. It was

agreed that arrangements should be made in connection with the Guntur tobacco station for the production of an adequate supply of acclimatised Virginia cigarette tobacco seed. Investigations are to be made to determine whether the quality of leaf deteriorates from acclimatised seed. The Imperial Agricultural Research Institute is to investigate the technical difficulties in the setting of berseem seed and provincial Agricultural Departments are to study the question of producing berseem seed in adequate quantities. It was agreed that whenever the Council financed plant-breeding schemes, it should also arrange for the maintenance of "nucleus" stocks of pedigree seeds.

It has been estimated that of 150 million acres growing five major crops in India 25 million acres are under improved varieties. Out of the 84,000,000 acres under rice, only 5,000,000 acres are under improved strains. It was, therefore, decided that the Council should undertake the study of Provincial methods of seed distribution and expansion of areas under improved crops, evaluate them and publish the collected information.

Simplified Experiments

Sir John Russell's recommendation that experiments, successfully carried out in Government farms, should be simplified for ordinary working conditions in the cultivator's fields was accepted. The Council's technical staff was asked to design simplified methods suitable for such conditions.

From their own examination of Sir John Russell's report, provincial Governments are experimenting with various new methods. Thus, in some cases Village "guides", after training on Government farms in modern methods are to be sent back to their villages to explain to the cultivators the improved methods and their adaptation to local needs.

One province is experimenting with summer schools. These are held at Government farms, where cultivators are given short courses in improved methods. School farms run by teachers trained in agriculture are to be opened to adults so that they too may benefit from the instruction available there.

Reduction in the fragmentation of holdings increases the efficiency of cultivation. Its tremendous effect can be seen by studying the results achieved in one province where in the last ten years in one division, 99,000 holdings were consolidated in 1,200 villages covering 11 lakhs of acres; 23 lakhs of fields have been reduced to 3 lakhs.

It was decided that the Imperial Council of Agricultural Research should collect and collate complete information concerning consolidation of holdings in the provinces. This information would show clearly the methods adopted, the Department by which carried out, the extent of the operations and the cost involved.

KING EMPEROR'S ANTI-TUBERCULOSIS FUND

SEVENTEENTH SUBSCRIPTION LIST

Grand Total Now Rs. 52,51,477

The seventeenth list of subscriptions actually received up to August 15, 1938, in response to Her Excellency the Marchioness of Linlithgow's Appeal for the King Emperor's Anti-Tuberculosis Fund, amounts to Rs. 1,34,508-10-0 which brings the grand total of cash in hand to Rs. 52,51,477-3-9.

Total amount previously acknowledged :
Rs. 51,16,968-9-9.

Assam :—Through Provincial Organisation,
5,000-0-0.

Bengal :—Through Provincial Organisation,
Rs. 40,842-14-4; Mr. Amulya Ratna Basee, Raida
Panchrol, Midnapore, Re. 1-0-0. Total :—
Rs. 40,843-14-4.

Bombay :—Through Provincial Organisation,
Rs. 20,000-0-0; Mamlatdar, Taluka Banebennur,
Rs. 338-8-0; Mamlatdar, Taluka Kalghatgi,
Rs. 41-13-0; K. E. Anti-Tuberculosis Fund, Taluka
Hangal, Rs. 27-0-0; Mr. Bhat Trimbak Sadashiv,
Taluka Wadi, Rs. 5-15-0. Total :—Rs. 20,413-4-0.

Delhi :—Through Provincial Organisation,
Rs. 500-0-0; Mr. M. R. Coburn, O.B.E., Simla (7th
instalment), Rs. 5-0-0. Total :—Rs. 505-0-0.

N.-W. F. Province :—Through Provincial Organisation,
Rs. 2,667-0-0; 'Anonymous' (by the sale of
some books), Rs. 100-0-0. Total :—Rs. 2,767-0-0.

Punjab :—Through Provincial Organisation,
Rs. 10,000-0-0.

Sind :—Through Provincial Organisation,
Rs. 12,000-0-0.

United Provinces :—Through Provincial Organisation,
Rs. 27,600-0-0.

Baluchistan :—K. E. Anti-Tuberculosis Fund,
Baluchistan, Quetta, Rs. 915-0-0.

Coorg :—K. E. Anti-Tuberculosis Fund, Coorg,
Rs. 210-1-0.

Neemuch Cantonment :—K. E. Anti-Tuberculosis
Fund, Neemuch, Rs. 221-8-0. Total :—Rs. 1,346-9-0.

Centre :—The Chartered Bank of India, Australia
& China—per Mr. C. F. Walsh, c/o Imperial Airways,
Ltd., Croydon, Surrey, England, Rs. 4-15-8; Persian
Gulf—per the Hon'ble the Political Resident,
Rs. 778-8-0; Central Excises & Salt Department,
Meerut, Rs. 573-8-0. Total :—Rs. 1,356-15-8.

States :—Jaso, Rs. 50-0-0; Khilchipur, Rs. 873-3-3;
Charkhari, Rs. 238-4-0; Jaora, Rs. 40-13-6; Ath-
mallik, Rs. 94-1-0; Khairagarh, Rs. 1,066-13-3;
Jashpur, Rs. 260-0-0; Sangri, Rs. 111-0-0; Jind,
Rs. 111-9-6; Nabha, Rs. 1,000-0-0; Sirmoor,
Rs. 2,500-0-0; Jaipur, Rs. 1,060-2-6; Shahpura,
Rs. 2,120-0-0; Kotah, Rs. 3,000-0-0; Dholpur,
Rs. 150-0-0. Total :—Rs. 12,675-15-0.

Grand Total :—Rs. 52,51,477-3-9.

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RURAL RECONSTRUCTION

Indian Army Spreads The Gospel

NEED FOR CIVIL AND MILITARY CO-OPERATION

What Has Been Achieved : What Remains

The average Indian soldier lives in cantonments under far more comfortable conditions than his friends do in their villages. Moreover, in his unit he becomes accustomed to dealing with modern equipment through the education he receives and the weapons and vehicles which he handles. Nevertheless, in the past he has almost invariably reverted to the average standard of living in his village when he leaves his unit.

In 1935, it was recognised that Indian soldiers should make excellent missionaries to spread Mr. Brayne's gospel of a high standard of living in villages, if only they could be taught how to keep up that standard themselves, and how to pass on their knowledge without annoyance to their friends. Also, it was realised that better villages should result in better recruits.

Training in rural reconstruction in the Army is therefore a matter of creating a self-respect which will be proof against the discouragement likely to be encountered in villages, and of instruction in suitable methods of improving the standard of living in villages.

Theoretical instruction is given as a subject of educational training in the Indian Army. Two books—"Citizenship In India, Its Privileges And Duties" and "Socrates Persists In India" have been translated into Roman Urdu and issues of two editions of both books made on a wide scale in 1937. Another of Mr. Brayne's books, "Better Villages", has been included as an English text book for instructors in the list of books recommended for use in unit schools. In addition, lectures by Mr. Brayne and his assistants are arranged in Army schools, units, and regimental reunions.

Practical instruction has so far been a matter of making it possible for Indian soldiers to take advantage of demonstrations which are given by the civil authorities. Army transport is used at concession rates for journeys to see these demonstrations.

Since civil and military training in rural reconstruction are so closely interconnected, liaison between the local civil and military authorities is of the greatest importance. To ensure this, committees have been formed in most of the cantonments in India. These committees usually consist of the Station Commander and representatives of units and of services, such as the medical service. Local civil authorities and departments are asked to cooperate. These committees are the bedrock of all Army training in rural reconstruction.

Commands were recently asked to report on the results which have been attained in this training; they were also asked to make recommendations on suitable methods of improving the training; their reports may thus be summed up: The inclusion of rural reconstruction in the educational training of the Indian Army has led all formations and units to take a deep

interest in the campaign. The serving soldier has now at least a fair theoretical knowledge of what can, and should, be done to improve the standard of living in his village. On the practical side, financial considerations have, with a few conspicuous exceptions, limited the Army's efforts. A few encouraging reports have been received indicating that in certain village areas the efforts of the returned soldier are bearing fruit, and that efforts are being made to try out the methods he advocates.

One encouraging feature of this campaign is a report that boys of King George's Royal Indian Military Schools are doing something to introduce into their villages the knowledge that they have acquired.

On the other hand, it is frequently represented that it is useless for Army personnel to advocate a high standard of living, since the village officials are not making any real effort in this direction. As a result the returned soldier, finding that his example and influence are insufficient to achieve anything, is still tending to lose interest and to drift back to the level of the other people in his village.

A particularly fine example of the influence of the military in rural reconstruction is that of Probynabad. In this area, Probyn's Horse have arranged for instruction in hygiene. Prizes are given periodically for the most sanitary village and the most sanitary house in each village. An ex-non-commissioned officer of the regiment lectures on anti-malarial measures and gives practical assistance.

Another example of practical results is that of Lansdowne. In this cantonment fruit trees have been planted in unit lines and in bungalow compounds, and a cooperative scheme for growing seed potatoes has been launched. In 1937, this station held a successful fruit, vegetable, and flower show at which exhibits were accepted both from unit gardens and from villages, both near and distant, in Garhwal.

Again, at Roorkee, an exhibition of Home Arts and Crafts by the families of the K. G. O. Bengal Sappers and Miners aroused interest amongst the wives of Indian soldiers. The Committee at Roorkee has also begun to form a permanent exhibition of local products, in the hope of reviving interest in local handicrafts and of maintaining the standard of craftsmanship.

The Future

It is proposed to continue along the same lines in the future, and also to investigate the following methods of instruction :

The teaching, in military and civil schools, of methods of improving the design of appliances used in villages and in village industries ; the provision of wireless sets in unit lines and the use of cantonment cinemas ; the provision of Mr. Brayne's models of good and bad villages in cantonments ; the provision of facilities in cantonments for setting up demonstrations.

It is also intended to investigate further the possibilities of linking Regimental Thrift Societies with the civil cooperative system, so that serving personnel should understand how the civil system works.

In lectures and demonstrations, it is not intended to illustrate methods which are beyond the means of ex-soldiers to carry out themselves on their return to civil life.

It cannot be too greatly emphasized that the Army alone can do nothing of any importance to improve the standard of living in villages. The closest liaison between local military and civil authorities is essential, and the local civil authorities must help the retired Indian soldier to influence his fellow villagers. The local civil authorities should look on the returned Indian soldier as a valuable asset to the community, and make use of him as such.

This note is confined to the rural reconstruction work of the Indian Army and does not cover what the Civil authorities are doing. At the same time, it must be acknowledged that Mr. Brayne, Rural Reconstruction Commissioner in the Punjab, is the driving force behind all rural reconstruction work, whether in the Army or on the Civil side.

The Army has taken up the idea seriously because it wants better recruits, as well as to ensure that the ex-soldier when he goes back to his village is a contented and useful member of society.

The Army carries out its training in rural reconstruction in two ways.

By theoretical training, carried out in Units.

By practical training, in which the Army has so far relied on demonstrations staged by the civil authorities.

The effectiveness of this training is largely dependent on the local committees which are set up in each Cantonment. These local committees form the main liaison with the civil authorities and the Indian Soldiers Boards. They are important because :—

(1) They form a direct link with the civil authorities engaged on rural reconstruction

work—in the Punjab with Mr. Brayne, and in other Provinces with the officer of Government employed on rural reconstruction work.

(2) Their work is to co-ordinate instruction in each station and to arrange for demonstrations in improved methods of agriculture, building, and so on.

(3) They take advantage of the demonstrations on farms, exhibitions and competitions organized by the civil authorities in local areas.

(4) They arrange for the attendance of Units School Instructors at local refresher classes.

(5) Army officers are sent round the districts to keep in touch with ex-soldiers and to bring to the notice of the local authorities, or Indian Soldiers Boards, any cases which these ex-soldiers want taken up. The object of the local committees is to get hold of these touring officers, interest them in rural reconstruction and in spreading the gospel of reconstruction work when they go out into the districts.

It is now intended to ask the Commands to take up certain additional subjects, *e.g.*—

(1) Whether the wireless sets which exist in the Units can be used to pick up the rural reconstruction programmes which are occasionally broadcast from the All-India Radio.

(2) To persuade local cinemas to exhibit films which show improved methods of agriculture, and so on.

(3) To persuade Units to give lectures on improvements used in villages, for instance, on village industries. But in this the Army will have to rely on the civil authorities.

Rural reconstruction work in the Army began on October 9, 1935. Local committees have been formed in every Cantonment, and each cantonment which has one Indian regiment has a Committee.

WOMEN WORKERS IN MINES

The Government of India have communicated through the India Office to the International Labour Office, Geneva, their decision prohibiting the employment of women on underground work in mines of all kinds in India.

This decision, which was taken by the Government of India some time ago, signifies the formal ratification of Convention No. 45 of the Washington International Labour Conference (1935) to which India was a party.

The Government of India have also brought the Convention to the notice of those Indian States to which its provisions appear to be relevant.

Employment of women underground was extensively practised in the past, and its prohibition gave rise to acute controversy, as it was argued that the elimination of women would seriously curtail the small earnings of their families. During the last eight years, however, the exclusion of women from underground work has been gradually effected, leading eventually to the ratification of the Geneva Convention.

THE FARMER'S HEALTH AND POCKET

Cattle Contagion's Heavy Toll

VETERINARY NETWORK CREATED

Link Between Muktesar And Provinces

India lost 318,855 animals in 1937, of which 279,397 were bovine and 37,513 sheep, from contagious cattle diseases, chiefly Rinderpest. Other diseases causing mortality were Surra, Bovine abortion and Tuberculosis.

To counteract this annual loss the Imperial Council of Agricultural Research initiated a scheme to create a network of veterinary investigation staffs. In 1932 investigation officers were appointed in Bihar, C. P., Punjab, Bombay and the Hyderabad State, and the scheme was extended until at the present there is an investigation officer in every province.

The Imperial Veterinary Research Institute at Muktesar gave a course of specialised training to these officers after their recruitment, paying special attention to the particular problems in their respective provinces. These officers were placed under the direct supervision of the Provincial Veterinary Directors and studied local conditions and collected necessary information for record and research at Muktesar. Thus a comprehensive survey of disease conditions was made possible. They also advised cattle-owners on the latest methods of disease control.

Funds have lately been provided to keep the scheme in force till the end of March, 1940.

The difficulties of surveying and controlling diseases in a vast country like India with such varying conditions, could only be overcome by the field work of these investigation officers in intimate touch with local conditions all over the country. Between researches in veterinary science carried out at Muktesar and ryots in their fields and homes, these officers act as a link.

Rinderpest

Rinderpest is the major contagious plague among cattle in India. It takes an annual toll of over 161,000 animals : the United Provinces, Bengal and Bombay lose over 20,000 each. The disease is spread among cattle by an ultra-microscopic virus similar to one that causes influenza and smallpox among human beings. It begins with an ulceration in the mouth which spreads inwards and corrodes the whole of the inside of the animal. In a serious case, the animal dies within twenty-four hours, but normally cattle survive for six or seven days.

The infection spreads among cattle just as tuberculosis does among human beings, through the inhalation of the spray of droplets thrown out by an infected animal into the air. The droplets contain innumerable disease germs, which floating in the air, contaminate the atmosphere.

Imported highly-developed breeds of cattle have been found to be the most susceptible to this disease, which is quite a

formidable obstacle in improving local breeds. Farmers cannot safely invest money on foreign breeds that are liable to infection.

The only way to combat this serious menace was through an all-India organization to procure complete data on it, for information available was meagre.

Rinderpest has been found to be an incurable disease. It was decided to check it by prevention. Investigations were carried on for six years at the Institute of Veterinary Research, Muktesar, originally by Dr. J. T. Edwards and later by Mr. J. R. Haddow, and a biological product known as "fixed goat virus" was discovered.

The ordinary rinderpest virus produces a considerable reaction and anti-serum has to be used to ward off danger. The use therefore of virus and anti-serum makes immunisation of cattle expensive for the farmer. With the "fixed goat virus" however, this necessity is obviated, as it is an attenuated product having a mild reaction. This virus has been extensively used both for prophylaxis and to control actual outbreaks ; it has been found satisfactory in many parts of India.

The operation itself has also been simplified which has rendered its performance by Provincial Veterinary Department subordinate officials possible. A more effective control has thus come to be exercised over the disease.

Caution has however to be exercised in using the new rinderpest virus on buffaloes. Reaction in them is more severe and a simultaneous use of anti-serum is necessary to avoid any untoward sequelæ.

Surra

Surra is another important disease investigated by the special staff. Surra is a blood infection primarily affecting horses and camels, but cattle and dogs also suffer from it to a certain extent. It is caused by a small animal parasite and induces an effect similar to that of sleeping sickness among human beings. The parasites are conveyed by a species of "biting" fly that breeds during the hot weather in certain areas

containing shade trees and water. The animals bitten by the flies become lethargic and swellings appear in different parts of the body. Horses are most susceptible and mortality among them is high. In camels, which are usually less hard worked, the disease runs for about six or seven months.

Valuable information was collected regarding the incidence of this disease. Considerable success has been achieved in the treatment of all animals by the use of "Bayer 205" or Naganol, a proprietary preparation.

Information was scanty regarding the occurrence of this infection among bovines, but in recent years numerous outbreaks have been recorded and substantial information regarding the cause, symptoms, mortality and treatment has been collected.

Bovine Abortion

Another disease that stands in the way of cattle improvement in India is Contagious Bovine Abortion. It is caused by a bacterium known as "Brucella Abortus". The raw milk from an affected cow is harmful to human beings and causes a low type of intermittent fever known as "undulant" fever.

A similar infection is found among goats, caused by "Brucella melitensis" and milk from an affected goat causes "Malta fever" in men. Apart from its effect on public health, the economic loss in milk and calves is considerable.

Johne's Disease

Further investigations have been also made into Tuberculosis and Johne's disease by the Investigation Officers.

Johne's infection, which is an insidious malady, particularly dangerous in heavily stocked dairy farms, is caused by a bacillus which multiplies in the mucous membrane of the animal's intestines. The infection may be conveyed through infected food and water, but unlike tuberculosis it is not communicable to human beings. It causes chronic diarrhoea and progressive emaciation, proving fatal in the end.

Another field in which the Investigation Officers have collected valuable data is animal nutrition. It has been shown that defective or faulty dieting is responsible for chronic malnutrition in a large number of animals and leads to loss of productive power and increased susceptibility to diseases.

In many parts of the country the milk yield of the cows is low, sterility common and mortality in calves high. Vitamin or mineral deficiencies have been shown to have caused various disorders such as bone disease, reproductive troubles, and blindness in calves.

Various other important problems of contagious bovine diseases, such as anthrax, hæmorrhagic septicæmia, black-quarter and parasitic and protozoan infections of livestock, have also been investigated. Diseases of sheep, goats and poultry have also received attention.

CENTRAL OPIUM BOARD VACANCY

INDIAN MEN AND WOMEN ELIGIBLE

The post of Secretary to the Permanent Central Opium Board in the League of Nations Secretariat has fallen vacant.

The vacancy will be filled from amongst candidates, men or women, who are above 30 years and below 50 years of age. Indians are eligible.

The appointment will be made for a period not exceeding seven years in the first instance, and if the age of the candidate selected is 45 or over, for a period not exceeding five years subject to one year's probation. The initial annual salary is between the minimum and maximum of Swiss Francs. 28,000 and Swiss Francs. 33,000 with, where the appointment is for seven years, benefits of membership of the League of Nations Staff Pensions Fund, but officials who are 45 years and over are not admitted to membership of the Fund.

The essential qualifications are a thorough knowledge of French and English, both written and spoken, capacity to direct the work of an administrative service and capacity for handling and understanding statistics. Due notice will also be taken, in addition, of special scientific, legal and commercial qualifications and particularly of knowledge of and experience in the narcotics problem in any part of the world, which any candidate may possess.

Applications in the handwriting of candidates themselves either in English or French, accompanied by a detailed *curriculum vitae*, and reference from persons familiar with the candidate's work, should reach the President of the Permanent Central Opium Board, Geneva, not later than November 15th, 1938; candidates must be prepared to proceed to Geneva for an interview, if requested.

FOR INDIAN CHILDREN

No Import Duty on Dried Skimmed Milk

A notification under the Sea Customs Act has been issued by the Government of India exempting dried skimmed milk containing not more than 4 per cent. of fat and no added ingredients, from the whole of the duty if it is liable to a preferential rate, and from so much of the duty as is in excess of 10 per cent *ad valorem* if it is liable to a standard rate.

This decision is a sequel to a recommendation made by the Nutrition Advisory Committee of the Indian Research Fund Association emphasizing the great value of skimmed milk in improving the health and development of Indian children.

LORD BRABOURNE

Departure And Arrival Dates

His Excellency the Viceroy, accompanied by Her Excellency the Lady Brabourne, proposes to leave Simla early in October on a visit to Kashmir, and to arrive in New Delhi on October 22, 1938.

CALCUTTA SHORTWAVE STATION INAUGURATED

Impetus To Cheap Sets

"A STATION A MONTH BRINGS THE RADIO TO STAY"

Choice Of Wavelengths Explained

The opening of the Calcutta 10 K. W. shortwave station on August 16, marked the completion of an important stage in All-India Radio's Rs. 40,00,000 broadcasting development programme. This is the eighth broadcasting transmitting station to be opened by A. I. R. in eight months.

The station was officially inaugurated by the Premier of Bengal who gave a talk at 7-50 p.m. Later in the evening His Excellency Sir Robert Reid, Governor of Bengal broadcast a message.

The Calcutta shortwave transmitter is the fourth and last shortwave transmitter in the programme. According to A. I. R.'s present technical development policy, it is unlikely that further shortwave transmitters will be opened in India, even if further funds become available. The present shortwave transmitters at Delhi, Bombay, Madras and Calcutta are sufficient to give a satisfactory shortwave service to the whole of India, as well as to Indians in adjacent countries.

Further stages in the development of broadcasting in India will provide mediumwave stations in towns which are not at present served from a local station.

Although the range of mediumwave transmitters is severely limited compared to the range obtained from a shortwave transmitter of the same power, the great advantage of the mediumwave local service for towns is that it permits the cheapest type of receiver to be used. At the present time a rapid growth in the number of listeners is being hindered by the absence of inexpensive receivers and up to the present commercial firms have been unwilling to produce a special receiver of this type for India, as the small number of broadcasting stations has not made it possible to justify the importation or manufacture of a special receiver.

When, however, the present development programme for mediumwave stations is completed there will be nine mediumwave stations in India and it is then hoped that the growth in the number of listeners will enable manufacturers to introduce a cheap receiver. Calcutta is at present provided with a mediumwave service from the existing 1.5 K. W. mediumwave station and satisfactory reception can be obtained on the cheapest type of set in the city and its neighbourhood.

Bengal is also to be provided with a 5 K. W. mediumwave transmitter at Dacca. The Installation Department of All-India Radio are at present occupied with preparations for the installation of the transmitting equipment and the Bengal P. W. D. have begun the transmitting station building; the aerial mast is already completed. The transmitting station is located at the sixth mile on the Dacca-Mirpur Road and will be opened early next year; it will provide an excellent service to East Bengal.

Why Wavelengths Are Spaced

The Calcutta Shortwave Station will be operating on a wavelength of 61.48 metres during the evening and on a wavelength of 31.48 metres at lunch time. It will therefore be operating in the new wavelength band recently set aside at the Cairo Convention for broadcasting in tropical and sub-tropical latitudes. The new shortwave stations at Delhi, Bombay and Madras are also operating in this new wavelength band at night with satisfactory results. Although the four shortwave stations are all located in the same band there will not be any interference between one station and the other on a normal type of receiving set. The Indian stations are separated as much as possible in this band in order to reduce any chances of interference but further separation cannot be made as this would involve operating outside the limits of the internationally agreed wavelength band.

As in other countries, the wavelengths which can be used for broadcasting by India are strictly limited by international agreement, and the Indian stations do not operate outside these bands.

All-India Radio receive suggestions from time to time that the new shortwave stations should operate in wavelength bands different from those permitted.

Apart from the fact that India being a party to the International Agreements on wavelengths cannot disregard them, the chances are great that any Broadcasting Station operating outside the wavelength bands specially reserved for Broadcasting will suffer interference from other Stations such as morse, mobile services and so on, and when this occurs no steps can be taken as the interfering station is in all probability entitled to operate on this wavelength.

(Please Turn to Page 101.)

ALL-INDIA RADIO BROADCASTING SYSTEM

Station.	Power in K.W.	Call Sign.	Wave- length (Metres).	Frequency in kc/s.	Transmission Time. Indian Standard Time. (Subtract 5½ hours for G. M. T.)
Original Stations					
Delhi M. W. ..	20	VUD	238.6	886	I 7 A.M. to 9 A.M. II 12 NOON to 2 P.M. III 6 P.M. to 11 P.M.
Bombay M. W. ..	1.5	VUB	244	1231	I 8 A.M. to 9 A.M. II 11-30 A.M. to 2 P.M. III 5-30 P.M. to 11 P.M.
Calcutta M. W. ..	1.5	VUC	370	810	I 12-36 P.M. to 2-36 P.M. II 5-6 P.M. to 10-36 P.M.
Peshawar M. W. ..	0.25	VUP	200	1500	5-30 P.M. to 11 P.M.
Stations Recently Opened					
Delhi S. W. ..	10	VUD2	31.3	9590	I 7 A.M. to 9 A.M. II 12 NOON to 2 P.M. III 6 P.M. to 11 P.M.
			60.0	4995	
Delhi S. W. ..	5	VUD3	19.8	15160	I 7 A.M. to 9 A.M. II 12 NOON to 2 P.M. III 6 P.M. to 11 P.M.
			31.3	9590	
Lahore M. W. ..	5	VUL	276.2	1086	6-30 P.M. to 11 P.M.
Bombay S. W. ..	10	VUB2	31.4	9550	I 8 A.M. to 9 A.M. II 11-30 A.M. to 2 P.M. III 5-30 P.M. to 11 P.M.
			61.1	4905	
Lucknow M. W. ..	5	VUW	293.5	1022	6-30 P.M. to 11 P.M.
Madras M. W. ..	0.25	VUM	211.3	1420	5-30 P.M. to 10-30 P.M.
Madras S. W. ..	10	VUM2	60.6	4950	5-30 P.M. to 10-30 P.M.
Calcutta S. W. ..	10	VUC2	31.48	9530	I 12-36 P.M. to 2-36 P.M.
			61.48	4880	II 5-6 P.M. to 10-36 P.M.
Stations Under Construction					
Trichinopoly M. W...	5	VUT	395.8	758	From December 1938.
Dacca M. W. ..	5	VUY	257.1	1167	From March 1939.

STORY OF THE SATPURAS

A ZOOLOGICAL STUDY

Zoological evidence has lately been found in support of what has hitherto been geologically well known, namely, that the present Gangetic basin is of recent origin and that before the Ganges began to flow into the Bay of Bengal, probably during the Pleistocene period about a million years ago, the Rajmahal hills and the hills of Assam, which then formed a part of the Satpura trend, continued the hilly area to the Himalayas, east of Sikkim.

To test the soundness of this hypothesis a party of the Zoological Survey of India was sent to investigate the fauna of the Rajmahal hills during February and March of this year. Though, owing to an exceptionally dry and hot weather, the party encountered great difficulties, the material obtained has proved of great zoological and geographical interest.

The fish-fauna discovered included several forms of hill-stream fish hitherto known only from the hills of Assam, in the Eastern Himalayas, in Burma and further east. The studies made fully bear out the fact that at one period the Satpura trend probably stretched from Gujrat to the Assam Himalayas.

A SNAIL'S AGE

What is the age of a snail ?

Believe it or not, this was a question of which scientific investigation became important when a few years ago quite an extensive fishery of commercially valuable sea-shells was discovered in the Andamans, and it became necessary to impose the restriction that no shell which was not fully mature should be removed from the sea. It was, however, not known at the time at what age these shells were mature, and what size of shell meant that its inhabitant was "grown-up".

A study of the sex glands of the marine snail in various sizes of shells at different seasons supplied the answer.

Snail's Growth

The Zoological Survey of India, who were in charge of this investigation, found a similar problem when discovery was made of a large population of marine shells called *Pyrazus palustris* in the course of a search for the commercially valuable *Trochus* shells along the coasts of the Andamans.

The study of the entire population of the marine snail, *Pyrazus palustris*, occurring in a small area near Port Blair, has now revealed that shells of this species not exceeding five millimetres in height are in their first year of growth and those not exceeding twenty millimetres and forty millimetres in height are in their second and third years of growth respectively.

It has also been found by measurements of the heights of a large number of young shells at different periods that growth was rapid in the

early ages of snails as in human beings and other animals. Thus shells with a height of two to nine millimetres attained in nine months a height ranging between ten and nineteen millimetres. The young shells five millimetres in height had a much more rapid rate of growth and attained in six weeks a height of seven millimetres.

Calcutta Shortwave Station Inaugurated

(Continued From Page 99.)

On the other hand, the wavelengths now used by Indian broadcasting stations are in the agreed broadcasting bands and interference from any station not entitled to operate in the band can usually be dealt with satisfactorily by international representations. The new 60 metre band previously mentioned covers a wavelength range of 60.42 metres to 62.05 metres, and as it has been adopted as the normal band for the evening transmission from all Indian shortwave stations, prospective purchasers of wireless sets should verify that this wavelength band is incorporated in the receiver which they propose to purchase.

In addition to the erection of the new short-wave transmitter at Calcutta and the medium-wave broadcasting centre at Dacca, A. I. R. are undertaking important improvements and modifications in the Calcutta Studio building. The present technical equipment will be completely replaced by the most modern available and in place of the present two studios, six studios, acoustically treated according to the latest methods, will be provided. This work will be undertaken after the new studios now being constructed at Bombay and Trichinopoly are completed.

With a high power shortwave transmitter at Calcutta, a 5 K. W. broadcasting centre at Dacca and up-to-date studios for Calcutta, Bengal, will be provided with an efficient broadcasting service which will permit those in Bengal and elsewhere in India to obtain satisfactory reception of Bengali programmes.

CONCESSIONS TO PRESS CAUSE LOSS ON TELEGRAMS

A Correction

The last paragraph of the article under this heading which appeared in our last issue on page 83, read as follows :—

"The mail contract with the P. and O. Company also came in for discussion and it was stated that the payment of Rs. 28,000 a year was considerably less than what would have been made according to the International Postal Convention."

The figure should not be Rs. 28,000 but £28,000.

SOME ASSEMBLY QUESTIONS AND ANSWERS

THE BURMA RIOTS

SIR GIRJA SHANKAR BAJPAI'S STATEMENT

August 12, 1938

MR. S. SATYAMURTI, Deputy Leader of the Opposition :

Will the Secretary for Education, Health and Lands be pleased to state :—

- (a) the latest position with regard to the Indo-Burman riots in Rangoon ;
- (b) the causes of these riots so far as they are known to Government ;
- (c) the total number of casualties, Indian and Burman, as a result of these riots ;
- (d) the loss of property as a result of these riots ;
- (e) the steps taken so far to quell the riots and the results thereof ; and
- (f) what steps, if any, the Government of India propose to take in consultation with the Government of Burma to remove all causes of misunderstanding between Indians and Burmans in Rangoon and in Burma generally ?

SIR GIRJA SHANKAR BAJPAI (Secretary, Education, Health and Lands Department) :—

(a), (b) and (c). On the afternoon of July 26, a mass meeting of Pongyis and laymen was held at the Shwedagon Pagoda to protest against certain remarks in a book written by a Burmese Muslim which offended Buddhists. After the meeting a procession took place and there was a clash with the police and disorder spread through various quarters of the town. Troops arrived quickly on the scene and also additional police and by 4 A.M. on the 27th morning the city appeared to be almost normal.

A notification proscribing the book was issued on the 27th morning.

The Muslim community had already on the 24th expressed regret at the publication and disassociated itself from the sentiments contained in the book.

About 9 A.M. on the 28th, as a result of rumours of an assault on Pongyis by three Indians, rioting broke out afresh in all quarters of the city. Orders were issued by the District Magistrate to all the newspapers forbidding the publication of anything likely to excite communal feeling and prohibiting the assembly of more than five persons. The police were reinforced by troops and armoured cars and detachments of the frontier force.

The situation remained disturbed throughout the night of 28th-29th and there was considerable looting and assaults in all areas. Further reinforcements of the troops and frontier force arrived. Evacuations were carried out on the 29th where possible of any Burmans or Indians from places where they were insecure.

On July 30, the situation had definitely improved and communal tension had eased. All open looting and assault had been ended and further evacuations were vigorously undertaken. Markets were opened and conservancy arrangements restored.

A joint appeal for peace and reconciliation has been issued by leaders of the Burmese and Indian communities endorsed by Sanghas and

younger Pongyis. The improvement has continued steadily and conditions are now practically normal.

There were reports of isolated cases of looting and assault on the borders of Rangoon on the 29th and the police were reinforced. On the night of July 30, trouble broke out in Mandalay on account of this same book ; there was serious rioting accompanied by looting and assault. The situation was always kept well in hand. Orders under Section 144 prohibiting meetings of more than five persons were issued on the 31st morning. 135 persons were arrested on the same day. There was distinct improvement by August 2 when trams were running and shops reopened. This improvement has continued up-to-date. There were disturbances on July 30 and on subsequent dates in places in Shwebo, Magwe, Pakokku, Myingyan, Yamethin, Toungoo, Prome, Tharrawaddy, Pegu, Insein, Hanthawaddy, Myaungmya, Pyanpon and Henzada districts. Additional forces were sent where necessary. The position in the districts at present is definitely much improved though in one or two districts tension still continues.

(c) and (d). Accurate figures of casualties among Burmans and non-Burmans for the whole country are not yet available, nor can an estimate of the extent of the loss of property yet be made. There is no destitution among Indians in Rangoon and none has been reported from the districts.

(f) Honourable Members will appreciate that the restoration of friendly relations between the Indian and Burman communities in Burma is primarily a matter for the communities themselves, aided by the efforts of their leaders and the Government of Burma. The House, may, however, rest assured that the Government of India will watch the future with unceasing vigilance and take any action that may appear desirable to them to re-establish on firm and lasting foundations, the traditional amity between Indian and Burman which has been disturbed by the unfortunate events of the last few days.

DISCRIMINATION AGAINST ARABIC STUDENTS ?

RAILWAY FACILITIES

NOT WITHHELD

August 17, 1938

QAZI MUHAMMAD AHMAD KAZMI : (a) Will the Honourable Member for Railways be pleased to state if it is or it is not a fact that students studying in Arabic institutions some of which even receive Government aid, are not considered eligible for all those privileges and concessions on Railways which are usually granted by Railways to students reading in schools in which English is taught and which are recognised by the Education Department of Government ?

(b) If the answer to part (a) be in the affirmative, have Government considered the advisability of granting the said privileges and concessions to students of Arabic institutions ?

Mr. A. G. CLOW :—

(a) Government have no particulars of such cases. According to the tariffs of Railways, concessions are being allowed for parties of not less than four in the case of :—

- (i) children attending schools of all kinds which are recognised by the Education Department of the Province or State in which the schools are situated ;
 - (ii) students of colleges affiliated to a recognised University ;
 - (iii) students of medical schools, technical, commercial, industrial and agricultural institutions under Government or recognised by the Government of the Province or State in which the schools or institutions are situated.
- (b) Does not arise.

JIWANI SEAPLANE STATION

August 17, 1938

SETH GOVIND DAS : Will the Honourable Member for Communications please state :

- (a) whether Government considered the question of developing the Air Station, Jiwani, as an alternative Air base to Gwadur for land and sea planes ;
- (b) whether Government corresponded with the British Government's Air Ministry in the matter ;
- (c) the expenses estimated to be involved ;
- (d) whether the Imperial Government have agreed to meet the expenses thereof whether in full or in part ; and
- (e) the stage at which the matter stands now ?

Mr. A. G. CLOW :—

- (a) Yes.
- (b) Correspondence has taken place with the Air Ministry.
- (c) Approximately Rs. 5 lakhs.
- (d) His Majesty's Government will meet the cost of the seaplane station at Jiwani in full. The question of providing a new aerodrome near the seaplane station in place of the existing emergency landing ground, five miles away, and the incidence of the cost, is under consideration.
- (e) The seaplane station has been transferred from Gwadur to Jiwani which has been used regularly since May 13 last. At present the arrangements are temporary. Estimates for the development of the station on a permanent basis are under the consideration of His Majesty's Government.

ANTI-MALARIA CAMPAIGN

TOTAL SPENT

August 15, 1938

DR. SIR ZIAUDDIN AHMAD : (a) Will the Secretary for Education, Health and Lands please state how much money the Government of India are spending on malarial problems ?

(b) Will Government state the amount of quinine and cinchona distributed free, or at a nominal cost, and what are their values ?

SIR GIRJA SHANKAR BAJPAI : (a) The total money which Government have spent on mala-

rial problems in the centrally administered areas during the last two financial years amounts to Rs. 1,37,500. From a grant made by the Government of India the Indian Research Fund Association have distributed Rs. 8 lakhs for the prevention and cure of malaria in rural areas.

(b) In 1935, the Government of India distributed 45,000 lbs. valued at Rs. 8,10,000 free of cost. Centrally administered areas have also distributed some quantities of quinine and quinine products but accurate figures are not available.

AEROPLANE CONSTRUCTION IN INDIA

August 17, 1938

MR. LALCHAND NAVALRAI : (a) With reference to the reply given to the supplementary question under starred question No. 1119, asked on the 31st March, 1938, will the Honourable Member for Communications be pleased to explain the reason for his statement that an investigation for finding out whether Indian materials can be used for constructing aeroplanes in India would be entirely useless ?

(b) Will the Honourable Member be pleased to state if there are materials available or likely to be available in India for construction and repairs of aeroplanes ?

(c) How many aeroplanes have actually been made in India and have any Indian materials been used for their construction or repair ?

(d) What steps do Government propose to take for construction and repair of aeroplanes in India and to find out Indian materials for their use ?

MR. A. G. CLOW : (a) and (b). No general investigation into the possible use of Indian components in aircraft construction is likely to be of value because, although some of the raw materials from which the manufactured articles are made are found and produced in India, the very complicated processing required for practically all materials used in aircraft construction cannot at present be carried out in India. I might add that even so far as the basic raw materials are concerned, an inquiry into the suitability of Indian timbers for the purpose of aircraft construction and repairs which is in progress, is not giving promising results so far.

(c) No aeroplanes have been constructed in India, but a small number of aeroplanes has been assembled or rebuilt in India from imported manufactured parts. No Indian materials have been used because the processing of raw materials is not carried out in India, and no material may be used in the construction of an aeroplane unless it complies with approved specifications.

(d) The Honourable Member is referred to the reply given to Part (c) of Starred Question No. 131 by Mr. Satyamurti on September 5, 1935.

Part (c) referred to :—

The first stage in the development of a manufacturing industry is the assembly of imported manufactured components. This business is being developed both by aircraft operators in India and by agents of the manufacturing firms. With business at its present volume it would be unwise to accelerate the process artificially.

BUREAU OF PUBLIC INFORMATION
Home Department,
Government of India.

INDIAN MILITARY ACADEMY

IMPORTANT CORRECTION

TO INDIAN INFORMATION SERIES ARTICLE

In the article entitled "The Indian Military Academy", which appeared on page 114 of the Indian Information Series, dated September 15, 1938, there occurred a serious misstatement which it is desired to correct forthwith.

In the first paragraph of Column 1, page 114, there occurs the following sentence:

"The Commission given is not King's Commission but it is called an Indian Commission, and confers on the holders the right of commanding Indian troops only."

This is incorrect, and the following should be substituted:

"The Commission is given in the Indian Land or Air Forces by His Excellency the Viceroy and Governor General acting on behalf of His Majesty the King Emperor. It is similar to the Commission held by Dominion Force Officers and provision has been made for the exercise of powers of command over British personnel."

Indian Information Series

VOL. III

Simla, September 15, 1938

No. 16

CONTENTS

	Page		Page
Sand Stowing In Coal Mines	104	Death Duties In India ?	112
On The Frontier	107	India's Military Academy	113
Books On Education	109	Improving India's Health	115
Anti-T. B. Fund Subscriptions	110	Jute Technological Research	122
Medical Review For India	110	Economic Adviser Trains Indians . .	123
Haj Pilgrims	110	Criticism Of The Assembly's President .	123
Quetta's Future	111	Paper Containers	123
Aerodromes Wanted	112		

WHAT IS—

SAND STOWING IN COAL MINES ?

Conservation Of The Nation's Wealth

SAFETY FOR UNDERGROUND WORKERS

Government Of India's Proposals

Proposals made in the Report of the Coal Mining Committee* which relate to stowing, that is, the filling of space underground, previously occupied by coal, with sand or other incombustible material, have now been considered by the Government of India who have also taken action on a large number of the subsidiary recommendations in the Committee's Report. These proposals have been put forward by them in a circular letter recently addressed to the Governments of Bengal, Bihar, C. P. and Berar, Punjab, Assam and Chief Commissioner, Baluchistan.

These proposals are :—

(1) That the Mines Department should continue to be responsible for safety and that the Mines Act should be amended so as to enable the Inspectorate to issue orders requiring positive preventive steps to be taken where there is danger from the crushing of pillars, premature collapse or the outbreak of fire.

(2) That a fund for the assistance of stowing in the Jharia and Raniganj fields would be provided by a cess which on the information now available is expected to work out

to four annas a ton on coal and soft coke despatched, with six annas a ton on hard coke, and coal-owners would be entitled to a rebate from royalty owners at the rate of half an anna per ton of material used.

(3) That allotments would be made from the fund to owners in those fields who desired to stow, by a Board which would be guided by statutory rules, and assistance would be based on the tonnage of sand used. The rules would provide for allotment on a system of tenders, with a preference in favour of owners who were ordered to stow for safety reasons.

*The Coal Mining Committee was appointed to inquire into the methods of extracting coal underground and to report on the measures which should be taken to secure the safety of the workers and to prevent the avoidable waste of coal.

(4) That the right to take sand from the rivers should be assumed by the State and assigned by the Board to owners who required sand. Owners should also be enabled to acquire such rights in or over land as they required for stowing purposes.

The Government of India emphasize that the subject is one of great complexity and legislation for stowing will represent an entirely new departure. It seems preferable, therefore, they say, to begin with as simple a form of organization as possible; this can be enlarged and elaborated in the light of experience if necessary.

A Big Problem

Following are the main points of the letter :

In the main coalfields, immense quantities of coal are now standing in pillars while the proportion of coal now being obtained from pillars exceeds that being secured from galleries, and must increase further. Unfortunately work in the past was largely directed towards obtaining as much coal as could be secured in the first workings, and pillars are in many cases insufficiently large to allow of their safe extraction by ordinary methods. In the Jharia and Raniganj coalfields, a stage has been reached at which the continued extraction of coal from pillars by ordinary methods is impossible in some cases and would involve in other cases serious danger to those engaged in the work and the likelihood of a great waste of coal.

There is no question that stowing, where it is employed, secures at the same time the maximum degree of safety and the minimum waste of coal. There are thus two aspects of the question to be considered, *viz.*, stowing for the purpose of safety and stowing for the purpose of conservation.

Stowing For Safety

There are considerable areas where further coal cannot be secured without either stowing or the exposure of the workers to grave danger and the Government of India have no hesitation in affirming that in such cases extraction without stowing should be prohibited. The Mines Act, indeed, recognizes this principle already; for it gives adequate powers to secure the workers, by regulation and executive action, against dangers that can be foreseen and prevented, and it contains a specific provision, recently made permanent by the Legislature, enabling the Inspectorate to control the extraction of pillars.

The Government of India believe that the situation now reached is that the cases in which stowing is wanted for safety purposes alone would, if sand could be supplied, involve its adoption on a fairly extensive scale.

The whole administration of safety measures should, in their view, continue to be a matter for the Mines Department which is answerable to Government, who in turn are responsible for framing such regulations and rules as may be necessary.

The defects in the existing safety arrangements appear to be twofold. In the first place,

the existing law and regulations are, in some respects, insufficient. In the second place, there are practical difficulties which tend to check the full enforcement of the law's requirements. The Government of India are already taking steps to amend the regulations on the lines of the Committee's recommendations and they believe that when this is done, a great advance will have been secured.

The practical difficulty which attends the enforcement of the most suitable safety measures at present is that stowing is costly, so that in many cases an order prohibiting extraction without stowing would involve the cessation of operations.

The question of statutory measures for the conservation of coal supplies raises more difficult issues.

The Government of India feel that statutory intervention for the purpose of conservation is desirable. The coal resources of the country represent an irreplaceable asset; and in the absence of revolutionary discoveries affecting the supply of energy, they are likely to remain an asset of great value. Recourse to inferior coals is possible for most purposes, but not without a loss of efficiency, and it is likely that long before the time at which the better coals are exhausted, their diminution and the increasing depths at which they must be won will enhance the costs of industry. Further when coal is lost, the waste is not confined to fuel; there are by-products of which future industrialists may make great use. Finally, the benefits of conservation are not likely to be deferred to a distant future.

If it is agreed that the State should intervene to secure better conservation of coal supplies, the question which arises is that of the method to be pursued.

The Committee recommend the application of compulsion together with financial assistance. The possibility has to be faced that the mine-owner would be put to loss in the interests of the community of the future.

Avoiding Coercion

If it were reasonably certain that conservation would, with the assistance proposed, prove not unprofitable to the industry as a whole, the application of compulsion without compensation would be justified, but the Government of India are not sure that this is at present true, and if the same end could be secured without coercion, this would be preferable.

Stowing cannot be enforced generally at the start, and it seems probable that safety requirements will make such demands on stowing material as to keep any organization that may be set up fairly fully occupied, while any surplus that it could spare would, if reasonable assistance were given, be taken by coal-owners who are willing to resort to stowing.

Again, stowing undertaken for safety purposes will itself secure conservation of coal, and other steps recommended by the Committee will

work in the same direction. In particular, the control which they wish to introduce over the dimensions of galleries and pillars should have important effects in preventing further waste ; these proposals have already been embodied in draft regulations and published for criticism. Thus, for the first few years at least, coercion is likely to yield no better results than can be obtained without it, while the experience gained will afford a sound basis for more drastic action if this proves necessary.

Assisted Stowing

But past experience indicates that it is unlikely that stowing would be extensively practised without some form of assistance.

In the Jharia and Raniganj fields it is desirable that assistance should be given to stowing, thereby reducing the burden on mines which are required to stow for reasons of safety and encouraging others to conserve their coal. Elsewhere the Government of India see no need for funds for these purposes. Conservation is of much less importance in other fields either because coal is not likely to be wasted to the same extent or because it is inferior in quality. The cost of such safety measures as are necessary in other fields can be laid directly on the coal-owners without undue hardship or dislocation of the industry.

The next question which arises is whether the assistance given should take a purely financial form or whether an official or quasi-official organization is required to facilitate the supply of sand.

It is, almost impossible under a system of assistance in kind, to devise any scheme that will do equal justice to all, unless and until the whole field is covered, a stage which may never prove essential.

The grant of assistance in monetary form, leaving it to the coal-owners to make their own arrangements for sand supply, would avoid this difficulty and would have the advantage of simplicity. It would also tend to secure an advantage in respect of cost by encouraging competition. Some collieries already have arrangements for stowing and it is probable that, as soon as a large number were compelled or found it profitable to stow, private enterprise would have no difficulty in meeting the demand. Nor is it evident that there would be a large amount of overlapping.

Funds To Be Made Available

Whatever conclusion may be reached regarding the system which should ultimately be adopted, the Government of India have no doubt that the grant of assistance in financial form would ensure more rapid progress at the start, while it would not preclude the establishment of a co-ordinating organisation later.

They propose, therefore, that funds be made available for those compelled or prepared to stow. With assistance in this form, it should be fairly simple matter to decide between competing claims. Thus tenders could be invited to be expressed in terms of the amount of sand that would

be taken at various rates of assistance and the allotments would go to those tenderers who offered the lowest rates. This would, in practice, ensure that the money went where it was most needed, i.e., where the largest amount of coal would be saved or secured for each rupee spent.

A tender system would also secure the adjustment of the demand for assistance with the supply, and would render it unnecessary to decide whether assistance should cover only the cost of delivery at the pithead.

Stowing Requires Sand

It might be desirable to make special provision for those compelled to stow by orders issued for safety purposes, and this could be effected by giving a small preference, e.g., about an anna a ton to their tenders over the tenders of those who were under no obligation to stow. Assistance should be based on sand utilized rather than on coal extracted ; a certain amount of stowing would be protective in character and would not be accompanied by the extraction of coal.

Any general scheme of stowing depends for its success on adequate supplies of sand being available. The Committee were satisfied that the supplies are adequate for the main fields.

The Government of India are disposed to believe that the most satisfactory arrangement would be the assumption by the State of the right to take sand from the rivers by the State ; but they think that a low fixed rent might be payable, as suggested by the Committee. The authority administering the fund could be entrusted with the task of assigning areas to those desirous of stowing, after making adequate provision for those already engaged in stowing operations. Owners could be given the right to acquire compulsorily other lands or rights over land necessary for the conduct of stowing.

The Government of India suggest that 4 annas a ton on coal would provide adequate funds. The rate on hard coke would then be 6 annas. A lower rate on soft coke is not strictly logical but the Government of India see no great objection to following the Committee's proposal and making the cess on soft coke the same as the rate on coal, in order to encourage the use of this form of fuel. This should not include the present soft coke cess, which would be kept distinct.

The Committee propose to supplement the cess by two other sources of income, viz., (a) half the assets and income of the Coal Grading Board and (b) a 10 per cent tax on royalties.

The first of these proposals is, in the view of the Government of India, objectionable in principle. The money raised for the Coal Grading Board is required for purposes which have no connection with safety or conservation and a tax should not be imposed for one purpose and used for another. The proposal that royalty owners should assist in stowing is obviously sound ; it is their coal which will be conserved,

(Please Turn to Page 111.)

ON THE FRONTIER

Events During May, June And July, 1938

THE SHAMI PIR'S MISADVENTURES

" General Conflagration Successfully Countered "

At the end of April no hostile *lashkars* were in being, but, in North Waziristan many small gangs, instigated by the Faqir of Ipi and his associates, were carrying out guerilla warfare against posts and communications. Sniping of camps and piquets, damage to telegraph and telephone lines, mining of roads and tracks with country-made bombs, and other minor offences were widely prevalent.

A hostile minority among the tribesmen was exploiting its nuisance value to the utmost and causing inconvenience and loss to other tribesmen and the general public and anxiety to Government. The continuance of disturbed conditions had made it impossible to effect any reduction in the number of troops employed in Waziristan, surplus to the normal garrison.

Towards the end of April, a Madda Khel *jirgah* had been warned against permitting their clansmen to commit any further outrages against Government and against harbouring or giving further assistance to the Faqir of Ipi. Certain named hostages, as a security for good behaviour, were demanded and in the meantime restrictions on the entry of members of this tribe into the settled districts were maintained. During the first fortnight of May the Madda Khel, true to their established reputation for procrastination, held meetings to discuss their future action and finally informed the local authorities that they were unable to provide the hostages.

In the meantime, the Faqir of Ipi's hostile activities, carried out from Madda Khel country continued. At his instigation, attempts were made to damage and poison the water supplies and pipe lines on which the troops and scouts depend; the mining of roads and throwing of bombs continued, with resultant injury to several persons; three cases of kidnapping occurred. It was therefore deemed necessary to bring the Madda Khel to their senses. Accordingly on May 16, after 48 hours' warning the most important parts of the Madda Khel country were placed under air blockade. This caused the Faqir of Ipi to change his tactics and to raise a *lashkar* with a view to creating a diversion and thereby restoring his prestige.

On May 27, this *lashkar*, some 300 strong with three locally made pieces of artillery, made an unsuccessful attack on the Scout's Post at Datta Khel and later attacked the *khassadar* post at Lowargi Pass, both attacks were repulsed with loss. Culverts and *khassadar* posts in the Upper Tochi Valley were also destroyed, but on May 29, the *lashkar* dispersed southwards. On the next day however three *lashkars* started to assemble, their respective strengths being 250, 400 and 600 men. One of these *lashkars*, with two pieces of artillery again attacked the *khassadar* post at Lowargi, and having forced the garrison to withdraw, proceeded to destroy the permanent reservoir which Government had constructed some years previously on the summit of the Pass.

In South Waziristan the air proscription of the territory of certain Mahsud sections, which had aided Mullah Sher Ali in his attack on the South Waziristan Scouts near Dargai Sar on April 14, had been effective. A Bahlolzai Mahsud *jirgah* assembled on May 1, and after admitting responsibility for the hostile acts committed, asked for a period of grace to enable them to deal with the offenders. After further negotiations, a settlement was reached towards the end of May, the Bahlolzai agreeing to exclude Sher Ali from their territory in the future.

Throughout the month there was a continuous series of minor outrages, including kidnappings, bombings, damage to railways and wire cutting in the settled districts. Members of the Bhattanni tribe were implicated in certain of these outrages and action was taken to arrest members of this tribe and to prevent the entry of Bhattannis into the settled districts. The Frontier Constabulary were active in rounding up hostiles and intercepting raiding gangs.

Events in June

On June 1, a second unsuccessful attack was made on Datta Khel Scouts' Post, some 20 rounds being fired by tribal artillery. In order to deal with the Faqir of Ipi's *lashkar* in the Datta Khel—Lowargi area the Third Infantry Brigade and the Razmak Brigade concentrated at Razani and advanced towards Lowargi on June 2, encountering stiff opposition. Operations against the tribal *lashkar* continued until June 6, on which day the road over the Lowargi Pass to Datta Khel was opened and the Scouts' Post at that place reinforced and replenished with supplies and ammunition. The construction of a new Scouts' Post on the Lowargi Pass, to replace the *khassadar* post which had been destroyed, was put in hand. The *lashkars* had apparently diminished in strength to some 200, partly as a result of the severe handling they had received and partly through disappointment at their small success and the lack of support they had received from the Waziristan tribes in general.

About June 14, however, the Faqir managed to collect a further 700 men, who were engaged, on June 16, by the Third Infantry Brigade near Mami Rogha and again severely handled. On June 17, the Lowargi Scouts' Post having been completed and garrisoned, the Third Infantry Brigade withdrew to Razani and the Razmak Brigade to Razmak.

The remnants of the *lashkar* still remained in the hills west of Razani and engaged in guerilla tactics, sending small gangs to the Razmak area.

In the meantime the air blockade of the Madda Khel country began to have its effect. Towards the end of the month negotiations were started, as the result of which the Madda Khel agreed to expel the Faqir of Ipi should he return to their country or, should this be beyond their powers, to call upon Government for aid to do so. After certain securities had been given by the tribe the air blockade was raised.

In South Waziristan a serious situation had arisen owing to the activities of Saiyid Muhammad Sadi of Damascus, known locally as the "Shami Pir". This man had entered Waziristan during the spring of 1938 and had been living quietly, engaged ostensibly in the settlement of tribal religious questions and blood feuds. During June suspicions arose regarding his *bona fides*, and on June 12, he was interviewed by the local authorities and warned that he should not hold any further large gatherings of tribesmen, nor should he participate in any movement hostile to the Afghan Government. The Shami Pir protested his innocence of any anti-Afghan Government feelings and volunteered to leave Waziristan in the event of trouble in Afghanistan.

The very next day, however, he held a large meeting at Kaniguram at which he openly disclosed his hand and, in spite of the opposition of many leading Mahsud Mullahs and Maliks, persuaded a large following to join him in aiding a revolt against the Afghan Government. He also endeavoured, though unsuccessfully, to enlist the support of the Faqir of Ipi. He announced his intention of leading his followers to attend a large meeting near the Durand Line, but, fearing opposition from certain influential mullahs, changed his plans. On June 23, he started to lead his following towards Afghanistan.

In the meantime, drastic warnings were issued to the Waziristan tribes to dissociate themselves from the Shami Pir's activities, and the political authorities succeeded in detaching considerable numbers from his following. In addition, the neighbourhood of the Durand Line was continuously patrolled by reconnaissance aircraft which were ordered to report any westerly movement of tribesmen. Troops were also moved from North Waziristan and held ready to move into the danger area.

On June 23, large parties of our tribesmen, including one led by Shami Pir himself, were observed moving westwards. Reconnaissance aircraft, were heavily fired on by these parties, one aircraft being hit by bullets in 19 places.

The aircraft retaliated and dispersed the parties. On June 25, aircraft were again fired on and replied. This prompt action, in conjunction with the warnings issued, soon took effect and the Shami Pir's followers began to disperse and return to their homes. On June 27, the Shami Pir arrived at Wana, under safe conduct, for an interview. He agreed to cease his activities against the Afghan Government and subsequently told the leaders of his following that a hostile incursion into Afghanistan would not be in the interests of the tribesmen. The next day the movement collapsed and the *lashkars* dispersed. On June 29, the Shami Pir was removed from Waziristan by air and has since returned to his home in Syria.

Events in July

After the settlement between Government and the Madda Khel at the end of May, the Faqir of Ipi took up his headquarters in a cave area near Kharre (Kharsin), which is in very mountainous country north of Datta Khel and within a mile or two of the Durand Line. Here he continued to instigate the commission of minor offences, to control the organization and movements of hostile gangs and to endeavour to raise fresh *lashkars*. It became obviously desirable to eject him from this new stronghold and for this purpose the Third Infantry Brigade and the Razmak Brigade concentrated at Razani on July 9.

The combined force then moved, *via* the Lowargi Pass to the Upper Tochi valley, unopposed except by snipers. On July 13, the advance northwards of the Tochi Valley began and Wuzhgai was reached without opposition. The next day the troops advanced on a two brigade front towards Kharre, meeting with increasing opposition as the day went on. The country is exceedingly difficult, being thickly wooded with very steep, and high hills and ridges. The difficulties of the terrain, the heat and the enemy opposition prevented the troops, in spite of their strenuous and exhausting efforts, from securing the final objectives that night. The fighting was heavy and the close cooperation of our aircraft was of the greatest value. The enemy exposed themselves rashly on many occasions and were severely punished; the *lashkar* dispersed during the night.

On the next day the cave area was searched and stores, ammunition and other belongings which had been abandoned by the enemy were destroyed or removed. The enemy strength on July 13-14, is estimated to have been about 1,000. The Faqir of Ipi fled on the approach of the troops. The force then withdrew from the area and subsequently returned to Razmak and Razani.

In South Waziristan Sher Ali, instigated by the Faqir of Ipi, had in the meantime been active and again led a gang of about 150 men, with one gun, towards Dargai Sar, near Splitoi. On July 11, he unsuccessfully attacked the South Waziristan Scouts holding the Splitoi Post who were rapidly reinforced by mechanized columns of troops from Wana and Manzai.

On July 12, Sher Ali's gang attacked some South Waziristan Scouts near Sorarogha and

fighting continued during the afternoon and night. The Scouts were reinforced and received close support from aircraft. The next day, having been disheartened by casualties and lack of success, Sher Ali's gang broke up into small parties, which have since been wandering in South Waziristan in search of opportunities for mischief. All Mahsud sections were warned against harbouring or assisting Sher Ali and his gangs; and on July 26, after due warning air action was taken against a small hamlet, the inhabitants of which had been guilty of flagrant disobedience of these orders.

Towards the end of June the Faqir of Ipi sent a gang, under a certain Mehr Dil, a deserter from the Tochi Scouts, to the Juni Ghar hills, in tribal territory, some 12 miles north of Bannu. Early in July this gang assumed the proportions of a *lashkar* and moved southwards, threatening the Bannu-Kohat Road. Columns were sent out from Bannu and Kohat to deal with the *lashkar* if it crossed the administrative border, while reconnaissance aircraft, which had been fired on, retaliated. As the result of this action the *lashkar* virtually dispersed, though remnants still remained in the Juni Ghar. On July 8, 99 members of the Urmarzai tribe were arrested and detained for having assisted Mehr Dil; on July 11, this tribe deposited 145 rifles as a security for future good behaviour.

Raid On Bannu City

On July 23, however, a *lashkar* of about 200 men, which had collected and been lurking near Gomatti four miles north of Bannu crossed the border and reached the Kurram River, near Bannu at dusk. Frontier Constabulary were moving out to intercept them, when firing started on the outskirts of Bannu city. Local bad characters had joined the *lashkar* and swelled its numbers to between 300 and 400. Bannu city was entered and shops were looted and set on fire. Desultory fighting continued for about an hour. Simultaneously with the raid, the Kohat-Bannu road was blocked in many places and four miles of telephone line destroyed. Additional troops and Frontier Constabulary from Kohat were moved into the Bannu District. Air action was taken to effect the dispersal of the gang, which, at the end of the month, when this review closes was still in the neighbourhood of the Juni Ghar.

The general situation in Waziristan at the end of July was still unsatisfactory. During the period under review the forces available were directed towards the elimination of the influence of the Faqir of Ipi with a view to the suppression of gang warfare, raiding, kidnapping and the prevention of minor outrages. Action was first taken to restrain the Madda Khel from allowing the Faqir to use their country as a base of operations and from rendering him active assistance. The success of this action caused the Faqir to raise further *lashkars* to restore his falling prestige and these *lashkars* were dispersed and taught a salutary lesson.

These operations might have had beneficial effect on general conditions in the area, had it not been for the serious situation, resulting in increased excitement and unrest, which arose as the result of Shami Pir's anti-Afghan Government activities

in South Waziristan. But for the immediate action taken to suppress these activities, widespread disorders might well have occurred on a large scale.

At the end of July, although the Faqir of Ipi's efforts to kindle a general conflagration have been successfully countered, marauding gangs were still in existence and roads were generally still unsafe for normal use. It has, therefore, not yet been possible further to reduce the number of troops in Waziristan additional to the normal garrison. On the other hand, during the period under review, the troops available locally were sufficient to control the situation without further reinforcement and although the situation does not give cause for any great anxiety it cannot be said with certainty that a permanent improvement has yet been effected. To effect such improvement cannot fail to be a slow process in a country where every man is armed to the teeth and in which it is at all times extremely difficult to distinguish friend from foe.

DO YOU WANT BOOKS ON EDUCATION ?

The Bureau of Education, which was revived last year and is closely connected with the Central Advisory Board of Education, has added during the course of the year more than 500 publications to its library. Most of these deal with educational matters, and include books on teaching and nature study. A collection has been made of important bulletins and pamphlets issued by the Departments of Education and universities of the different countries of the world.

The Library, which is in the Imperial Secretariat Building, South Block, New Delhi, is at the disposal of anybody who cares to make use of it; no fee is levied.

Special facilities are provided for persons interested in education problems. Thus Members of the Central Advisory Board of Education and of the Central Legislature and officers of the Government of India, Provincial Ministers of Education, Provincial Directors or Deputy or Assistant Directors and Directresses of Public Instruction and Superintendents of Education, Delhi, Ajmer-Merwara and Central India and Baluchistan, Inspectors and Inspectresses of Schools, Principals of Affiliated Colleges, Headmasters and Headmistresses of Government High Schools, University Professors and Principals and Vice-Principals or Head Masters and Head Mistresses of training colleges or normal and training schools, are entitled to borrow books and periodicals from the Library through postal requisition.

To others, recommended by the Provincial Director of Public Instruction or Senior Educational Officer, books are supplied on loan on deposit of a fee.

A catalogue of the books has recently been published and can be purchased from the Manager of Publications, Delhi or it may be referred to during office hours in the Library itself.

KING EMPEROR'S ANTI-TUBERCULOSIS FUND EIGHTEENTH SUBSCRIPTION LIST

Grand Total Now Rs. 54,49,846

The eighteenth list of subscriptions actually received up to August 31, 1938, in response to Her Excellency the Marchioness of Linlithgow's Appeal for the King Emperor's Anti-Tuberculosis Fund, amounts to Rs. 1,98,369-6-10, which brings the grand total of cash in hand to Rs. 54,49,846-10-7.

Total amount previously acknowledged, Rs. 52,51,477-3-9.

Assam.—Through Provincial Organisation, Rs. 7,000-0-0.

Bengal.—Through Provincial Organisation, Rs. 19,940-10-5.

Bihar.—Through Provincial Organisation, Rs. 19,469-6-8.

Bombay.—Mamlatdar, Taluka Ranebennur, Rs. 326-0-0.

Madras.—Through Provincial Organisation, Rs. 35,000-0-0 ; Collections from Lodges of the District Grand Lodge of Madras, Rs. 104-0-0. Total :—Rs. 35,104-0-0.

Orissa.—Through Provincial Organisation, Rs. 6,400-0-0.

Punjab.—Through Provincial Organisation, Rs. 10,000-0-0 ; Mr. Devi Datt Singh, Thakur of Dhauli, Simla District, Rs. 15-0-0 ; Members of the Messines Lodge, No. 3588, R. A. O. B., Sialkot, Rs. 15-0-0. Total :—Rs. 10,030-0-0.

United Provinces.—Dr. Barkat Ali, Saharanpur, Rs. 10-0-0.

Baluchistan.—K. E. Anti-Tuberculosis Fund, Quetta, Rs. 68-0-0.

Mount Abu.—K. E. Anti-Tuberculosis Fund, Mount Abu, Rs. 650-0-0.

Centre.—Lady Cassels (Proceeds of a dance at "Snowdon"), Rs. 2,111-11-0 ; British subjects in Sinkiang—per Acting Consul-General, Kashgar, Rs. 84-6-0. Total :—Rs. 2,196-1-0.

States.—Baoni Durbar, Rs. 2,350-0-0 ; Garrauli Jagir, Rs. 76-4-0 ; Jaora, Rs. 3,475-0-5 ; Janjira, Rs. 1,765-0-0 ; Keonjhar, Rs. 577-1-6 ; Bonai, Rs. 52-8-0 ; Ranpur, Rs. 1,182-10-0 ; Jawhar, Rs. 233-4-0 ; Dharampur, Rs. 10,000-0-0 ; Rajpipla, Rs. 19,645-0-0 ; Cochin, Rs. 25,000-0-0 ; Jaipur, Rs. 2,462-4-9 ; Jodhpur, Rs. 2,205-1-4 ; Tonk, Rs. 1,151-2-9 ; Through Western India States Agency Organisation, Rs. 27,000-0-0. Total :—Rs. 97,175-4-9.

Grand Total :—Rs. 54,49,846-10-7.

The progressive totals of the amounts credited to the Central account at New Delhi in respect of the various Provinces are :—

Assam, Rs. 74,700-0-0 ; Bengal, Rs. 4,47,505-4-11 ; Bihar, Rs. 51,646-7-10 ; Bombay, Rs. 3,51,233-7-3 ; C. P. and Berar Rs. 35,689-10-3 ; Delhi, Rs. 70,235-1-0 ; Madras, Rs. 3,50,329-2-0 ; N.-W. F. Province, Rs. 40,195-9-9 ; Orissa, Rs. 41,979-0-0 ; Punjab, Rs. 3,58,143-0-6 ; Sind, Rs. 40,385-2-0 ; United Provinces, Rs. 1,52,952-11-3.

MEDICAL REVIEW FOR INDIA

An Indian Medical Review, the first attempt of its kind in the history of modern medicine in India, containing information on all matters of interest to the medical, nursing, pharmaceutical and allied professions, will shortly be published by the Director-General, Indian Medical Service.

Hitherto the various provinces and the Indian States have been publishing annual records of the activities of their respective Medical and Public Health Departments. The Public Health Commissioner with the Government of India has also been publishing annual reports dealing with the incidence of diseases, and health statistics, but a Review of the type now to be published is a new departure, and hopes are entertained that the publication will fulfil a great need.

The subjects, which it is proposed to include, cover a wide field, from administrative organisations in the provinces and at the Centre to statistics relating to medical colleges, hospitals and dispensaries in British India, and to those under the control of the Political and External Affairs Departments of the Government of India and Mission Medical Institutions.

The Medical World

Detailed information will be given about the medical profession and Medical Services of India, hospitals, dispensaries and Nursing Homes, with special reference to facilities for rural medical relief, a subject of vital interest ; medical inspection of school children ; post-graduate training of medical officers ; X-ray and Radium facilities available in India ; mental hospitals and psychiatric clinics ; scales of fees charged from patients at the various Government hospitals ; legislation for the control of practitioners of the Indian systems of medicine ; Provincial and Central legislation regarding the registration and control of practitioners of the modern western system of medicine and surgery ; medical education of men and women in India ; history and activities of the various medical colleges and schools ; the system of training of nurses, their examination, registration and conditions of service ; facilities available for maternity cases and training of the midwife and the dai ; history and activities of the important research institutions and of the Imperial Serological Department ; control of pharmacy and drugs ; and the work, methods and organisation of the numerous medical and cognate societies.

HAJJ PILGRIMS

Those who intend to proceed to the Hedjaz for the performance of the next Hajj will be interested to know that, for pilgrims sailing from Indian Ports, the Kamaran Quarantine fee has been reduced from Rs. 8 to Rs. 3 per head for the ensuing pilgrim season.

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AFTER THE EARTHQUAKE

QUETTA'S FUTURE

As the Quetta Earthquake demolished practically the whole city, the opportunity was taken to undertake a complete and accurate survey of the whole area before the city was rebuilt.

This work, which was entrusted to the 'E' Survey Company of the Survey of India, was completed in less than eight months. The reconstruction of Quetta city is based on the plan prepared by them. The difficulties that confronted them were many, the most pressing of which were (1) the difficulty of finding the boundaries of roads and properties as clearing operations were going on at the same time and (2) the absence of owners of properties in many cases, who either did not exist or had left Quetta.

Three types of plans were finally decided to be produced. These are :

Plan type A—showing the property limits of the roads as they stood before the earthquake.

Plan type B—showing alterations which were likely to be made for the purpose of widening roads. In these plans, the widened roads were surpainted on plans prepared according to type 'A'.

Plan type C—showing the finished plan of each ward as it should appear after reconstruction.

The total cost of this work was approximately Rs. 17,000 as against the estimated cost of Rs. 28,000. The reduction was due to the fact that clearance operations of the city had been completed much earlier than was originally anticipated and the Survey parties could carry on their work uninterrupted.

The Future

It is perhaps too early to predict the future of Quetta after the devastating earthquake of 1935, but Cantonments which formerly contained the largest concentrated military garrison in India are being constructed on the same scale as before with a few small exceptions.

The city is the Cantonment market and the market for the countryside, and it is clear that to that extent, it is assured of a future.

At present, the greater part of the city, though cleared, is unbuilt upon while in the rest temporary buildings of a semi-permanent type have sprung up. The demand for labour for reconstruction in the Cantonments and in the Civil Lines will attract working population in the city.

Again, Quetta is the only available hill station for Sind and the Southern Punjab and once the apprehensions caused by the disaster

have worn off, it is probable that visitors will again be attracted in the city in summer.

The pressing problem for the landowner in Quetta is finance. Earthquake reconstruction is necessarily expensive, though endeavours have been made by Government in the earthquake Building Code to provide methods of construction.

The growth of Quetta as a city must needs be gradual and will depend to a great extent upon the ability of the owners of property to earn sufficient money to enable them to build again.

Sand Stowing In Coal Mines ?

(Continued From Page 106.)

and they will reap an advantage thereby. But a central tax on royalties is not constitutionally permissible, and in any case such a tax would be costly to collect and irksome. The Government of India therefore propose that the company or person paying the royalties should be entitled to deduct from payments due to the royalty owners a sum based on the material put into the mine. Half an anna per ton of material might be appropriate.

The work could probably be discharged by a single official, but the Government of India consider that he might be given a Board consisting of, say, four representatives of the coal mining organizations, who would sit for a term of years. It would be necessary to maintain a careful check on the amount of sand or other material used, and ensure that stowing was efficiently done, and the Government of India would not object to entrusting this duty to the Mines Department, which would have to be strengthened for the purpose.

Other Proposals

There are a number of other matters arising out of the Coal Mining Committee's Report.

Action has been or is being taken separately on the proposals relating to safety which do not depend on stowing, and the Government of India are examining independently the other proposals relating to conservation. The question of the further rationalization or nationalization of the industry will also be examined.

Whatever views be taken on that subject, it is clear to the Government of India that decisions in respect of the proposals for stowing should not be deferred until conclusions on the bigger issues can be reached. No conclusions involving any substantial reorganization of the industry could take effect until after the lapse of some years. The extension of stowing at an early date is imperative for safety purposes and desirable in the interests of conservation.

AERODROMES WANTED

"TRADE FOLLOWS THE 'PLANE'"

India needs more and better aerodromes. The Central Government has been obliged to devote its available resources to the development of aerodromes on the main Trans-India route and on the two main feeder routes.

Outside these routes, civil air transport has had largely to rely on the existence of R. A. F. landing grounds scattered throughout the country. These grounds are not situated with the particular object of serving commercial centres. Moreover they are frequently of insufficient size for the safe operation of commercial aircraft when loaded to their paying capacity.

Potential aircraft operators are deterred by the lack of aerodromes to serve important localities. Provincial Governments, Municipalities, and private persons hesitate to prepare aerodromes in the face of the lack of aeroplanes to use them. The vicious circle is one which sooner or later has to be broken. The Indian States are opening up aerodromes in their territories and others may be expected to follow.

It is of paramount importance that aerodromes should be properly sited and planned and that they should be maintained and operated to a uniform standard for the sake of safety. In British India the necessary standard can be assured under the Indian Aircraft Rules. In approving aerodromes within their territory the Indian States will be guided by the same standards so as to ensure uniformity throughout India.

Municipal authorities and other persons who may be considering how to bring new trade to their towns by improving their amenities, will, therefore, be interested in a book entitled 'Notes on the Preparation, Licensing and Operation of Aerodromes and Landing Grounds', just published by the Directorate of Civil Aviation of the Government of India.

This book is an important summary of information on the planning and management of aerodromes, it will also be of assistance to pilots, particularly those who may be called upon to advise as to the choice and development of aerodrome sites.

The book is a mine of information on aerodromes. Details are given of the requirements of different classes of aerodromes, from emergency landing grounds to first class air ports, including such matters as selecting the site, drainage, clearance of approaches, buildings, lighting for night flying, etc.

Many of the leading points are illustrated by simple sketches as, for example, the different kinds of markings to be used on aerodromes and the arrangements of aerodrome lighting. There are chapters on such matters as legislation, the responsibilities of an aerodrome licensee, night flying requirements and aerodrome maintenance.

That an aerodrome should be as close as possible to the town which it is meant to serve, but that it should at the same time be zoned and planned for future expansion is one of the important points brought out.

There are several difficulties peculiar to aerodrome construction in India, such as the problem of drainage and the need for prepared runways during the monsoon, and the high altitude and the high temperature of many parts of India which make it necessary for aeroplanes to have more space in which to take off, these problems are fully discussed in this new book.

Pilots also will find much to interest them, more particularly in the useful facts given in the chapter "Operation from Aerodromes of limited dimensions", which provides by simple graphs and explanations a key to the safe use of small aerodromes and what allowances should be made by pilots for altitude, slope, temperature and similar factors.

DEATH DUTIES IN INDIA ?

POSSIBILITIES TO BE

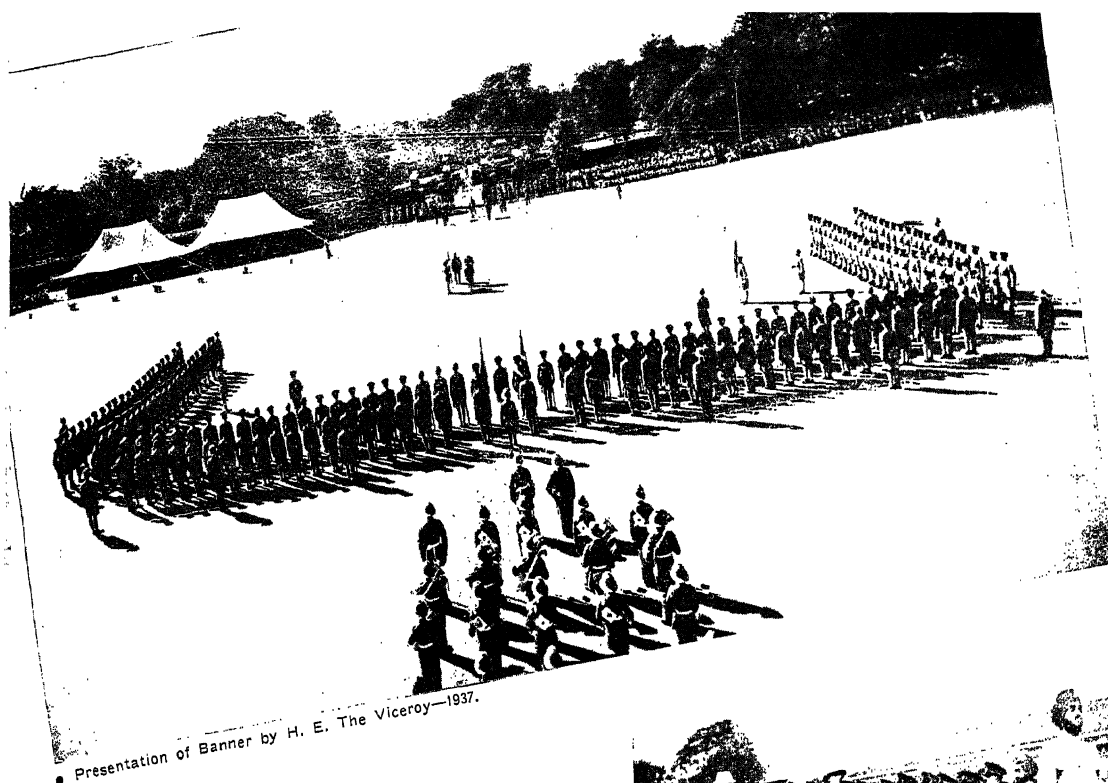
INVESTIGATED

Mr. A. H. Lloyd, on vacating his present appointment as Member, Central Board of Revenue, shortly, will undertake an investigation of the possibilities of death duties in India.

Death duties or duties in respect of succession to property, as they are technically called, are, under the Government of India Act, 1935, to be levied and collected by the Central Government in so far as they relate to property other than agricultural land, but the net proceeds in any financial year of any such duty (except in so far as those proceeds represent proceeds attributable to Chief Commissioners' Provinces) do not form part of the Central Revenues and are to be assigned to the Provinces and to the Federated States, if any, within which that duty is leviable in that year, and shall be distributed to the Provinces and those States in accordance with such principles of distribution as may be formulated by Act of the Federal Legislature. It is, however, open to the Federal Legislature, at any time, to increase the duties by a surcharge for Federal purposes, and the whole proceeds of such surcharge form part of the Central Revenues.

When the Provincial Ministers of Finance met the Finance Member, Government of India, in Delhi in January last, a request was made that the Central Government might make a special investigation to explore the possibilities of death duties in India and Sir James Grigg promised to take up the question. The investigation which has been ordered is a sequel to that promise.

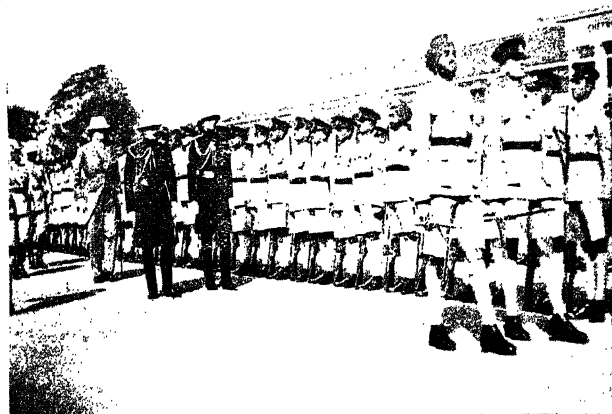
Mr. M. Slade, at present officiating Secretary, Commerce Department, succeeds Mr. Lloyd as Member, Central Board of Revenue.



● Presentation of Banner by H. E. The Viceroy—1937.

The Indian Military Academy

... on the lines of Woolwich and Sandhurst.



● Inspection by H. E. The Viceroy—1937.

In 1918 it was decided that Indians should be eligible to receive the King's commission for service in the Indian Army and a limited number thereafter were admitted annually to the Royal Military College, Sandhurst and Royal Military Academy at Woolwich.

In the following years the increased demand for Indianization resulted in the decision to establish a military college in India on the lines of Sandhurst and Woolwich, for the training of Indian officers.

The Indian Military Academy which opened on October 1, 1932, with forty cadets has increased in strength year by year and has now reached its full capacity of two hundred cadets ; it is situated in Dehra Dun in the United Provinces, a place of considerable beauty, possessing an equable climate, and offering every type of country and ground.

As it is realised that it is to the Academy that India can look for new officers, trophies of all kinds are being collected to help to create a traditional atmosphere. In the beautiful Chetwode Hall are lodged colours of disbanded regiments, such as the Bombay Grenadiers. Disbanded regiments have also presented silver and big game trophies, knowing that in the Academy they will be treasured. Other regiments have presented silver salvers for use in the mess.

In this way a background of history and tradition has been built up, and is proving of inestimable value in the education of the cadets. A series of fine buildings with modern equipment and comforts has been created in the centre of spacious playing-fields and grounds, set in surroundings of great natural beauty far away from the smoke and dust of town life.

The building of a new library is in progress. This follows other improvements that have helped to

complete the equipment of the Academy, not only in military matters, but in widening general knowledge, developing character and fostering patriotism among the cadets. The new building will be large and dignified, for it is designed to serve as a conference hall as well as a library. A whole time librarian was appointed some time ago and substantial progress has already been made in getting together a first-class collection of military text books, books of general information, military histories and fiction.

Recent gifts of collections of old-time weapons and armour from certain Ruling Princes form the nucleus of what will be a fascinating all India museum, of steadily growing importance as additions are received.

The Academy has as its object :—To develop the cadet in leadership, discipline and physical fitness, to instill in him a high sense of duty and of honour and a realization of his responsibilities as a servant of the State ; and to ensure that a cadet on his first commission will understand and be able to perform the duties of a platoon commander.

Since all instruction is given in what is to the cadet a foreign language—English—the training and instruction while following the general line of other similar institutions necessarily differs in detail owing to the language problem. A cadet has first to be

thoroughly proficient in English before he can commence his military training. For this reason his first term is taken up almost entirely with Drill, Physical Training, English and Mathematics.

Cadets are prepared for and given commissions in the line regiments of Cavalry and Infantry, and also in the technical branches of Artillery, Engineers and Signals. The commission given is not a King's commission—but it is called an Indian commission and confers on the holders the right of commanding Indian troops only. It is similar to the commission held by Dominion Force officers.

The course of instruction lasts two and a half years, and each year is divided into two terms of about eighteen weeks. Cadets receive instruction in Drill, Physical Training and all the ordinary military and scholastic subjects, as well as in equitation, science and practical handicrafts in the workshops.

The Academy is organised in four companies commanded by British officers; each Company has its own block in which cadets have their own bedrooms, and a Company Ante-Room and billiard room. Each Company is divided into two platoons, and the discipline and interior affairs of the Company are left largely to the cadets themselves. In addition to the regular officer commanding, each Company has a cadet Under Officer and the necessary cadet Non-commissioned officers. All cadets mess together in the cadets' mess, a room capable of seating two hundred and fifty at one time. There is no distinction as to creed or caste.

There are all sorts of creeds and castes amongst the cadets—Hindus—Mohammadan—S i k h s—Bengalis—J a i n s—Anglo-Indians—Parsis—Indian Christians and pure Europeans, whose parents are domiciled in India.

There are three types of cadets who are eligible for admission to the Academy as potential officers.

- (a) The "Open" cadet, that is, one who has passed in by means of the open competitive examination and who pays the full fees.
- (b) The "Army" cadet or ranker who has been specially selected from the ranks of the Indian Army on account of his educational and other qualifications. He is admitted free.
- (c) The "State" cadet nominated by his Indian State and who, after completing the course is eligible for employment only in the State that nominated him, and not in the Regular Indian Army.

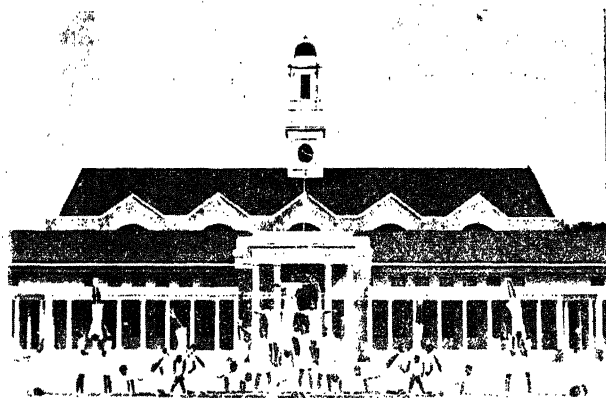
There are about forty vacancies each half year, which are divided up approximately into fifteen open cadets, fifteen army cadets and ten State cadets.

Great importance is attached to all games and sports and every facility and encouragement is given to cadets to take part in them. Each game or sport has a British officer in charge to supervise and instruct, matches being held with teams from neighbouring stations. The playing fields cover some 200 acres and there are excellent Hockey, Football, and Cricket grounds, Tennis and Squash Courts and a large enclosed Swimming Bath.

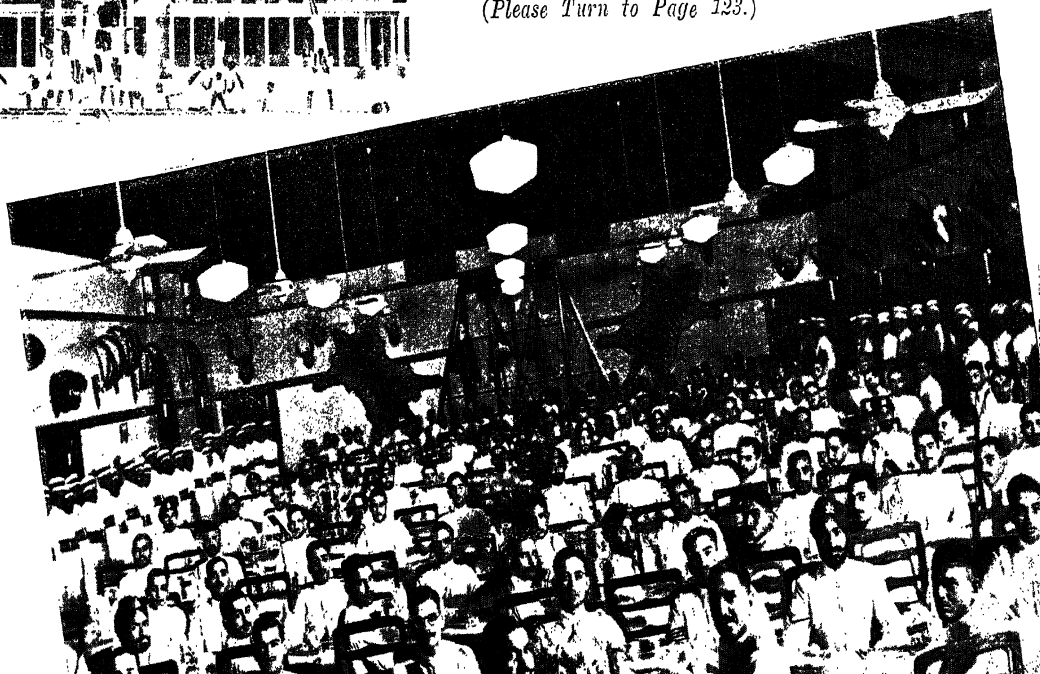
His Majesty the King Emperor was graciously pleased to honour the Academy by presenting to it in 1934 a King's and Regimental Colour and a Banner to be competed for each term and held by the Champion Company. His Excellency the Viceroy of India has presented a Banner to be awarded each half year to the best Company at sports and games. These Banners are keenly contested and honoured trophies.

In addition, there is an amateur dramatic club, a camera club, and a voluntary class in carpentry. While there is plenty of work and play for a cadet, no parents need be afraid that the life is one of unrelenting toil and undue physical strain.

(Please Turn to Page 123.)



● Keep Healthy.



IMPROVING INDIA'S HEALTH

Save The Mothers

LOWEST PLAGUE MORTALITY ON RECORD

Public Health Commissioner's Latest Annual Report

Maternity and child welfare work has made notable advances since its inception as a national movement in India in 1918, but there are still large gaps in the services, particularly in the field of obstetrics, which must be filled before material improvement in the health of the nation can be assured, says the Public Health Commissioner in his latest Annual Report.

Notable advances include the establishment of training schools for health visitors in Bombay, Madras, Delhi, the Punjab and the Central Provinces and the institution of a course at the All-India Institute of Hygiene and Public Health, Calcutta, for a Diploma in Maternity and Child Welfare for medical women. In addition, some 800 welfare centres have been opened in urban and rural areas where mothers can receive individual instruction and advice on the care of their own health and the health of their children.

Nevertheless public opinion has not yet been sufficiently roused and such advance as has been made is largely due to the pioneer efforts of voluntary societies, whose resources, both in respect of funds and of personnel are naturally limited.

Sufficient information is now available as the result of special inquiries to show that maternal mortality in India is probably five or six times as high as that of England.

A statistical survey of maternal mortality, financed by the Indian Research Fund Association, was started in Calcutta, primarily to collect information on which the preventability of the maternal deaths could be assessed, to estimate the relative urgency of better ante-natal care, better midwifery and better post-natal care and to enable recommendations to be made for the extension and improvement of existing services.

The rate of maternal mortality, it was found, was as high as 24.5 per 1,000 live-births. The maternal mortality rate in England and Wales was 3.8 in 1936, and, when it is remembered that a high death rate implies a correspondingly high rate of sickness, the extent of suffering and invalidism which child-bearing causes in India, can well be imagined.

Inadequate Midwifery

Defects in maternity and child-welfare work are greatest in midwifery.

Information on the provision of midwifery services in Bombay Presidency shows that about 70 per cent of the confinements in Bombay City were conducted in institutions and 18 per cent in certain rural towns were conducted by skilled attendants. During 1936 for 130,000 urban and 600,000 rural births there were respectively 210 urban hospitals with about 2,500 obstetrical beds and 61 rural

hospitals with nearly 200 beds. The number of women employed in these hospitals include 88 medical graduates, 73 licentiates and 625 midwives. For domiciliary midwifery, 14 graduates are employed along with 169 midwives. In Bihar with nearly 30,000 registered births in towns and over 11 lakhs in villages there are 48 urban institutions with 253 maternity beds and 32 rural hospitals with 12 beds. Seventeen medical women graduates and 48 licentiates are employed in connection with the institutions in addition to 87 midwives. A total of 79 salaried midwives are engaged in domiciliary midwifery in Bihar.

These figures represent the upper and lower limits of midwifery services in the provinces; both indicate the grave inadequacy of these services and the extent to which both hospital and domiciliary midwifery staffs require to be augmented.

Apart from beds for abnormalities arising during pregnancy, labour and the lying-in period, beds are also required for women whose domestic surroundings are unsuitable.

Further, increasing numbers of women are now seeking admission to hospitals for confinement, because of their amenities, and this demand is being met to a certain extent by the establishment of maternity homes, which are often unsatisfactory from the point of view of equipment and skilled attendance. The movement is, therefore, not without risk, and some control of the standards and methods of these institutions would seem necessary if the lives of mothers are to be suitably safeguarded.

During the past few years Provincial Governments have introduced legislation designed to improve the training of midwives, nurses and health visitors. These Acts should give a much needed stimulus to the movement towards better midwifery and should also ensure the early review of existing conditions, although it must be added that all have not yet been enforced.

The most serious defect in many of these Acts is the absence of any clauses dealing with the prohibition of practice by the unregistered.

Maternity and child welfare schemes are based on a system of home visiting, of ante-natal and post-natal clinics and centres, where infant and pre-school child consultations are conducted and classes can be arranged for the mothers. Each year shows a diminution in the

number of so-called welfare centres staffed by untrained workers. The primary objects of maternity and child welfare work are to educate parents in the nurture of a healthy race and to prevent disease; these objects can be achieved only by the employment of trained health workers.

Trained Health Workers Wanted

The first training school for health visitors was established in Delhi in 1918 under voluntary auspices; seven are now at work in India, two being government institutions. Approximately 60 to 70 students are trained each year, a number gravely insufficient to meet the existing needs.

Only about 300 health visitors are at present employed in the whole country, whilst the total births annually number about ten millions.

The trained health visitor is the vital unit in any maternity and child welfare scheme, just as home visiting is the basic service for which she is responsible. If home visiting is to achieve success, it must be systematic, intensive and carried out with sympathetic understanding.

It is unfortunate, therefore, that the shortage of qualified health visitors, combined with vague and erroneous ideas on the part of employing authorities concerning a health visitor's duties, frequently lead to her energies being dissipated over too wide an area.

PURE WATER : PURE FOOD

HOUSING : CONSERVANCY

"An Affair of Mains and Drains"

The total municipal public health expenditure in India during 1935-36 was over Rs. 4½ crores in an income of about Rs. 18½ crores, and, for individual municipalities, ranged from 16 per cent to 41 per cent of their total incomes, whilst in the case of district boards the figure was about 2 to 7 per cent with a total expenditure of over Rs. 1 crore in an income of Rs. 19 crores. Expenditure on the three items of conservancy, water supply and drainage formed the bulk of public health expenditure, in urban areas the percentage of the total varying from 53 per cent to nearly 93 per cent. In rural areas, the corresponding figures varied between 26 and 76 per cent of the total.

The provision of a sanitary environment forms the foundation on which alone the superstructure of public health can safely be built. The supply of wholesome water, efficient removal and disposal of refuse and nightsoil, the suppression of nuisances, public cleansing, improved housing and the inspection of food supplies—these are some of the basic requirements of a community if it is to maintain a reasonable standard of health.

In the seventies of the last century when sanitary reform was inaugurated in England by the provision of water-supplies and sewerage

systems to urban areas, the idea was ridiculed as "a policy of sewerage, an affair of mains and drains." Both in their immediate and remote effects, however, these comprehensive programmes of sanitary works have had a profound effect on the health of the country. Cholera which had repeatedly caused havoc during the previous four or five decades disappeared altogether whilst the prevalence of typhoid fever has been reduced to negligible proportions. During 1871-75 the annual mortality from typhoid fever per million living persons was 371, by 1926-30 the figure had fallen to 9.

Protected Water Supply

In India, too, the beneficial effects of introducing protected water-supplies are visible in a number of towns in Bombay Presidency where the death rates from cholera, dysentery and diarrhoea fell to about a third or even less.

There can be little doubt that, if local bodies devoted the necessary funds towards the provision and maintenance of protected water-supplies, they would obtain more than an adequate return in terms of better health for the populations under their care.

At present, in this country, piped water supplies are almost exclusively confined to urban areas. Out of 1,298 towns, only 250 or about 19 per cent have been so far equipped with this primarily public health necessity. It must be added, however, that nearly 52 per cent of the total urban populations of India now enjoy the amenity of a piped water supply. Gradual, but slow progress is being made, but unfortunately instances can be cited where local authorities fail to maintain their installations in efficient working order—a deplorably short-sighted policy.

Village water supplies have recently been investigated. From the information provided by Provincial Governments, at the instance of the Government of India, it appears that in at least 30,000 villages the water supply is either situated at such a distance as to cause considerable inconvenience to the inhabitants, or the supply is totally inadequate to meet their needs, particularly in the hot weather. In one province alone the number of villages so situated numbered over 13,000.

Block grants made by the Government of India for rural reconstruction have, to some extent, stimulated the improvement of water supplies and other sanitary works in rural areas during the past few years, but much more must be done before sanitation of the villages comes up to a standard which should be considered as the minimum essential for a healthy life.

Markets And Slaughter Houses

The provision of markets and slaughter houses and their sanitary supervision form an important function of local authorities, both urban and rural.

But a great deal still remains to be done before it can be said that satisfactory progress has been made. Even where markets of a reasonably sanitary standard are in

existence, the local authorities concerned frequently fail to prohibit the sale of food in unauthorised places and take no steps to prevent food contamination.

With 89 per cent of the population of the country living in villages, rural health is a matter of vital importance. But the rural health problem is one which admits of no easy solution and in consequence it has been found useful to try out experimental schemes in limited areas. So far, most of these schemes have been assisted by generous grants from the Rockefeller Foundation and "Health Units", as they are called, have been working for some time past in the Madras Presidency, the United Provinces and in Delhi, whilst further "Units" will, in all probability, be shortly started in the provinces of Bombay and Bengal.

Social Customs

These centres serve the purpose of testing methods of rural health administration and of arriving at probable estimates of cost, while they also afford excellent opportunities for the field training of public health workers and students.

But rural health problems cannot be solved by public health measures alone and no scheme for rural development can be considered adequate unless it provides for a many-sided attack on the physical, social, economic and educational aspects of village life.

The suggestion is, therefore, made that a Rural Development Council should be formed at the headquarters of each province, with a district Council for each district. On these Councils there should be representatives of the Public Health, Medical, Education, Industries, Agricultural, Co-operative and other departments of Government, so that co-ordinated action can be taken. A percentage of provincial revenues should be specially set apart for rural improvement and made available to each district in the form of grants-in-aid on condition that the latter contributes a share from its own funds.

Stress is laid on the necessity for planning these rural ameliorative schemes over a period of years, since short-term efforts are bound to fail. Improvement of individual and communal health involves, in most cases, radical changes in methods of living, the growth of new and better community habits can often be observed only when a new generation has grown up in an environment of new ideas and new practices.

In order to help Provincial Governments in financing schemes for rural development, the Government of India sanctioned, during the past three years, two grants of Rs. 92½ lakhs and Rs. 103 lakhs respectively. The programmes of expenditure showed some variation from province to province, but everywhere public health measures claimed a large share of the money, including rural water supplies, rural sanitation and anti-malarial operations.

An important point in regard to all measures of social reform is to recognise that they are dynamic processes in which the active co-

operation of the people for whose benefit the measures are adopted, is an essential element for success. In this sense the news from the Punjab is heartening.

"No less than a sum of Rs. 1,12,295" says the Director of Public Health, Punjab, "was voluntarily subscribed by 887 villages for sanitary work, and in addition, in 592 villages contributions in labour and material were made. There were some 200 more villages in which unrecorded sums of money were subscribed."

Food Adulteration

Adulteration of food is a matter of considerable importance. Unfortunately, however, in most provinces, no Food Adulteration Act is in force in rural areas and, even in urban areas where legal provisions exist, their enforcement leaves much to be desired. In some places, 50 or 60 per cent of the samples taken were found to be adulterated; in individual articles, the percentage was even higher.

The question of the adulteration of the common articles of food was raised at the inaugural meeting of the Central Board of Health last year. The Board unanimously agreed to appoint an *ad hoc* committee to report on the legislative measures now in force in this connection in the different provinces and to suggest additions and amendments.

A school medical service is one of the most important parts of public health administration. Experience all over the world has shown that the provision made for the health of the school child, by periodical examination and the correction of defects, has proved to be a sound investment in betterment of the national health. In England the school medical service was developed in 1908, and since then the benefits conferred on the rising generations have contributed in no small degree to a general raising of the nation's standard of health.

In India, unfortunately, the school medical service is one of the least developed of the public health services. In some provinces nothing at all is being done and, even in the provinces where a scheme exists, its operations are restricted and are not carried out uniformly.

Enlarged tonsils and adenoids defects of vision and dental caries are all common. Provision for the treatment of defects discovered during medical inspections varied greatly from province to province, and in no instance could existing schemes be considered adequate.

Free Milk Supply

In some provinces attempts have been made to supplement the diet of poorly nourished school children by the free supply of milk, or of mid-day meals, but these have been tried in limited areas only.

In order that mal-nutritional defects—now known to be common—should be corrected and that systematic medical care of school children should be taken, rapid development of school medical services on an adequate scale is urgently required all over the country.

So far as industrial hygiene is concerned, since the Royal Commission on Labour in India issued its report nearly seven years ago, increasing attention has been paid to the conditions of factory labour by Governments, the legislatures and by the general public and action has been taken in many directions to implement the recommendations made in the Commission's Report.

But the evils attendant on concentration of factory labour and the consequent development of slums exist in more than one of the large industrial centres of this country.

It is clear that with a few isolated exceptions, the housing problem has nowhere been given adequate attention. The responsibility for action lies primarily on the provincial Governments and on the local authorities.

No immediate large-scale attack is possible, partly because of the great expenditure involved and partly because, as in the case of other social ameliorative measures, a housing campaign can only be assured of success when it is supported by an enlightened public opinion. In the average village, the Indian home is kept scrupulously clean in accordance with traditional ideas of hygiene, but the villager like the agricultural peasants of other and more advanced countries, sees nothing objectionable in the accumulation of refuse in the vicinity of his house nor is he usually aware of the danger of the pollution of soil and water. Radical improvement in present conditions will, therefore, only follow when the people become sufficiently educated to demand a higher standard of communal hygiene, both in urban and rural areas.

Public Health Departments in India have recognised the importance of health education of the people and by means of posters, leaflets, health exhibitions, health songs, dramas, magic lantern lectures, cinema and broadcast talks, the message of health is being carried to an ever widening circle of the public.

Public Health measures can be successful only in so far as they secure the active support of an enlightened public opinion. Public Health administration should, therefore, be decentralised as far as possible. This policy has been in force in India for a quarter of a century past and the principle received statutory sanction in the Government of India Acts of 1919 and 1935, and health services have also been in direct touch with the people through their local authorities.

Experience has, however, indicated the necessity for continued co-ordination of effort, not only for the exchange of ideas, but also for the formulation of reasonably uniform lines of development. To serve these purposes a central consultative body, the Central Advisory Board of Health, was formed in 1935, on which are represented the Health Ministers of all the provinces assisted by their principal health and medical advisers. The machinery for co-ordinating public health work in India has thus been established and it may perhaps be anticipated that the coming years will witness increasing progress in every phase of public health activity.

But the development of health personnel in the provinces has been by no means uniform. Nearly half the districts and three quarters of the municipalities are still unprovided with qualified health officers. The Central Board of Health recognised the great importance of employing qualified health staffs in every urban and rural area, and one of its resolutions recommended that, wherever necessary, provincial Governments should take legislative sanction for enforcing the employment of health officers by local bodies and for securing control over the recruitment and conditions of service of the health officers employed by local authorities.

TOLL OF DISEASES IN INDIA

CHOLERA DECLINES

BUT

SMALL-POX PERSISTS

Of a total of nearly 6,400,000 deaths or 23 per mille in British India in the year 1936, the latest year for which consolidated figures are available, approximately 160,000, or 0.6 per mille were from cholera; 105,000 or 0.4 per mille from small-pox, 13,000 or 0.05 per mille from plague; 3,600,000, or 12.7 per mille from "fevers"; 280,000, or 1.0 per mille from dysentery and diarrhoea; 490,000 or 1.8 per mille from respiratory diseases; and 1,730,000 or 6.1 per mille from other causes.

Deaths from plague during the year were the lowest on record since 1896 when plague first came into India. Of the provinces, the N.-W. F. P., Delhi, Orissa, Assam and Ajmer-Merwara were completely free of the disease; the United Provinces were the worst affected, recording about 56 per cent of the total mortality in British India.

Cholera mortality also fell during the year by about 57,000. The decrease in incidence was common to most provinces, the important exception being Bengal where the mortality was 1.5 per mensem or 25 per cent higher than that of the previous year.

Cholera Reservoir

India, however, unhappily still continues to live up to its evil reputation as the world's reservoir of cholera infection.

The reasons for this comparative failure to effect satisfactory control of the disease in spite of vigorous campaigns, are that large areas of the country do not yet possess any local public health staffs; secondly, even where health staffs exist, their numbers are often inadequate to cope with the large populations widely scattered in numbers of small villages; further, without safe water supplies and an efficient system of conservancy, it is almost impossible to make appreciable progress in the effective control of the spread of infection in rural areas.

Despite these handicaps, Provincial Public Health staffs have done good work, particularly

within recent years in the sanitary control of the numerous fairs and religious festivals, which are held all over the country. Whilst previously it was all too common for outbreaks of cholera to occur at these centres and to be followed by widespread infection, the elaborate precautionary measures now generally in force, have largely been effective in preventing dissemination of the disease from these dangerous foci.

Philippines Eliminate Small-pox

The persistence of small-pox infection and the occurrence of periodic severe epidemics in different parts of India make it clear that although in vaccination we possess a powerful preventive weapon, that weapon has at no time during the past been used as effectively as it might have been. In the Philippines, on the other hand, the rigorous enforcement of vaccination has been followed by the almost complete elimination of the disease.

After vaccination of the inhabitants of the six provinces in the vicinity of Manila, which had an annual mortality of 6,000 from small-pox, the deaths from this disease were reduced to insignificant numbers. In Manila, with a population of over 250,000, not one death from small-pox occurred in a period of seven years. More than 10,000,000 vaccinations were performed between 1905 and 1915 without loss of life or limb, showing that vaccination in itself is unattended by risks.

And India ?

Yet the deplorable fact remains that India recorded over 100,000 small-pox deaths during 1936. Amongst the individual provinces, Bengal reported the largest mortality, deaths numbering about 46,000 or 44 per cent of the total recorded in British India.

Compared with 1935, the increase was as high as 800 per cent.

The potency of the vaccine lymph, prepared in the different laboratories in India, is high and within recent years an appreciable rise has occurred in the numbers of primary vaccinations and revaccinations performed by the provincial vaccination staffs, which during 1936 totalled over 11,000,000 primary vaccinations and over 13,000,000 revaccinations. The year's total is the highest annual figure on record, except that for 1935. These figures are no doubt large, but the population of India approaches 400,000,000.

Despite these efforts only about 49 per cent of infants available for vaccination in British India were successfully vaccinated during the year. This figure shows how much more remains to be done and when it is noted that in Assam, Bengal, Bihar, Orissa and Madras the percentages are as low as 22 to 37, it is evident that the vaccination staffs of these provinces have still a large leeway to make up, but unfortunately no Public Health Department is sufficiently manned to enable it to deal with the whole of the population under its control.

Further vaccination is compulsory only in about 75 per cent of the towns and in less than 50 per cent of the rural areas and

the enforcement of law leaves much to be desired even in compulsory areas. Since the annual numbers of the vaccinations performed are not sufficiently large to protect the population, the enforcement of compulsory vaccination of young infants alone cannot banish the disease from India and revaccination should be done before school age, and again between ten and twelve years of age.

There can be no question that if compulsory revaccination were generally enforced, small-pox need not be a serious cause of sickness or mortality.

The omnibus group of diseases included under "fevers" was responsible during the year for nearly 56 per cent of the total mortality. It no doubt mainly consists of deaths from malaria, but it also includes large numbers of deaths from other diseases in which fever is a prominent symptom.

100,000,000 UNDER MALARIA

An estimate is made that the annual deaths from malaria in British India total $1\frac{1}{4}$ millions and that about a hundred million persons suffer from this disease each year. During the past decade, cholera, small-pox and plague, the three infectious diseases which generally attract most notice, were together responsible for about 357,000 deaths each year, a figure which is less than one third of the annual toll of life taken by malaria.

The question of malaria control in India is mainly a rural problem, because not only do 89 per cent of the people live in rural villages, but the incidence of the disease in the villages is much higher than that ordinarily found among the urban populations.

"No satisfactory general method of bringing malaria under rapid and effective control in rural areas at a cost within the means of the people, has, however, been evolved in any malarious country in the world", observes the Director of the Malaria Survey of India.

The policy to be adopted must therefore be directed to such amelioration of conditions as may be practicable rather than to expensive methods of control, and with this end in view, every effort should be made, in the first place, to encourage the consumption of quinine.

Intensive anti-malaria work was started in Delhi in 1935, with funds provided by the Government of India with the object of eliminating, if possible, malaria from the city, so that the Imperial Capital may, apart from benefits conferred on local inhabitants, serve as an example to the rest of India, in the practical application of scientific knowledge.

A special grant of Rs. 10 lakhs was given in 1935-36 by the Government of India to the Indian Research Fund Association mainly for anti-malarial work. Of this amount, Rs. 2 lakhs was sanctioned by the Association for anti-

malarial work in Delhi rural areas and the balance allotted as follows :—

(a) Rs. 2 lakhs to Madras Presidency, (b) Rs. 2 lakhs to the United Provinces, (c) Rs. 1 lakh to Bengal, in each case on condition that an equivalent amount was sanctioned by the Provincial Government and that the expenditure on approved schemes should be spread over a period of five years, and (d) Rs. 1 lakh to the Assam Government for the Assam Medical Research Society, which is actively engaged in malarial research and is supported financially by the Provincial Government.

Cinchona Plantations Wanted

It is estimated that India's probable annual requirements of quinine for the purpose of effective mass treatment amount approximately to 600,000 lbs. Her present consumption is only about a third of this quantity, of which nearly 110,000 lbs. are imported and 90,000 lbs. are produced in the country. Any cheapening of the cost of quinine is, therefore, dependent on a considerable expansion of India's production. Under the new constitution, cinchona is a provincial subject, but the Government of India had recently sanctioned an investigation in regard to the areas in India which would be suitable for cinchona cultivation and the cost of cultivation in those areas. This investigation has already been carried out.

Tuberculosis Campaign

There is strong evidence that tuberculosis, particularly of the pulmonary type, has markedly increased within recent years in certain areas. The most urgent need is the provision all over the country of a chain of tuberculosis clinics where skilled treatment and advice can be obtained from trained staffs of medical officers, nurses and home visitors, increase in the number of beds in hospitals and establishment of sanatoria for tuberculosis cases and the institution of tuberculosis colonies and settlements at a later stage.

No national effort on these lines and of the magnitude necessary for this country can be successfully undertaken without the fullest co-operation of the people, of the Provincial Governments, local authorities and voluntary agencies. The work of voluntary organisations such as the Tuberculosis Association of Bengal, has been largely responsible for the development of public opinion, particularly in large cities like Calcutta, but there is need to multiply such efforts throughout the country. Above all, these schemes require financial support, and it is to be hoped that the recent appeal launched by Her Excellency Lady Linlithgow on behalf of the King Emperor's Fund will receive the generous support of all interested in the welfare of India's people.

It is estimated that there are no less than five million cases of leprosy in the world and that, of this number, approximately a million are to be found in India. Fortunately, one important feature of the disease in India is that about two-thirds of the cases are relatively mild and that in some of these mild cases the disease is of little clinical or public health importance.

Leprosy Clinics And Colonies

In India, it has been found that the incidence of the disease is highest along the eastern coast of the peninsula in the western parts of Bengal. From the eastern belt of high prevalence the disease gradually diminishes to the north and west, until a fairly wide area of comparative freedom from the disease is reached, comprising the northern half of Bombay Presidency, including Gujarat, Rajputana, the western portion of the United Provinces, the Punjab, the N.-W. F. Province, Sind and Baluchistan.

Incidence is relatively higher among males than among females, the proportion being about two to one. The disease is also found generally to assume a more severe form amongst males.

The work of leprosy relief in India as in other countries, is shared by official and non-official organisations. But the problem is so vast that existing organisations have so far found it impossible to produce any very striking reduction in the prevalence of the disease.

Within recent years, a considerable expansion of treatment activity has resulted from the provision of leprosy clinics in different parts of the country, but whilst present methods of treatment are of undoubted value in a proportion of cases, the leprosy problem cannot be solved by treatment alone.

While the segregation and isolation of all infective cases of leprosy, which probably number between 300,000 and 400,000, is not practicable, the Report draws attention to the development of rural leprosy colonies as a hopeful line of preventive work in areas where incidence is high.

A new Forest Farm Colony, which is a co-operative undertaking—of Government, the American Mennonite Mission and the Mission to Lepers being represented on the Board of Control, has already been started in the Central Provinces.

Cancer

Until recently the general impression has been that cancer claims a much smaller proportion of deaths in this country than in Europe and America, perhaps because medical and public health reports generally make little mention of this disease. In order to obtain more accurate information, an enquiry was begun about four years ago under the auspices of the Indian Research Fund Association, by an examination of the records of the larger teaching hospitals.

Whilst it was recognised that hospital statistics would fail to give a correct picture of the general incidence of a disease, this method of approach appeared to be the only one practicable. The inquiry, which extended to every province, including Burma, revealed that the age of maximum incidence of cancer was at least ten years earlier than in western countries and Japan, and in the case of the female generative organs, earlier by 15 to 20 years.

Cancer of the mouth is more common among males than among females and among Muslims than among Hindus. This form of cancer has its lowest incidence

in the Punjab where the habit of chewing *pan* is not so common as in other parts of India. The incidence of the disease increases as one goes eastwards and southwards.

The conclusion was reached that if more reliable data were available, the prevalence of cancer in India would be found to be little different from that of Western countries.

Although much remains to be discovered regarding the causes of cancer, two facts stand out prominently : (1) the treatment of the disease, in accessible sites, gives satisfactory results if a diagnosis is made early ; (2) few cases consult a doctor at an early stage of the disease.

Though no definite campaign has so far been planned, radium is available in four or five institutions, including the Lady Hardinge Medical College, New Delhi ; the Radium Institute, Patna, Bihar ; the Chittaranjan Seva Sadan and the Bengal Cancer Institute, Calcutta, and the Barnard Radiological Institute in Madras.

HEALTH IN INDIA'S JAILS

LOW DEATH RATE

That the health of the general jail population in India was satisfactory during the year, and that the medical and health administration of Indian jails has continued at a satisfactory level of efficiency, is the opinion expressed by the Public Health Commissioner.

The hospital admission rate for all diseases showed a fall, compared with 1935 and also with the quinquennial average. The general mortality rate (11 per mille) was the same as last year, but is one per mille below the rate for the previous quinquennium, and compares favourably with the rate for the whole of India for the year, which was 23 per mille.

The fall in the incidence of malaria has been maintained, and this decrease is particularly noticeable in the provinces of Bengal, Sind, Bombay and Assam. There has also been a fall in the admission rates for dysentery and diarrhoea.

Decline In Jail Population

The average daily jail population during the year of the district and central jails of India was nearly 143,000, or over 700 less than in 1935. Decreases occurred in North-West Frontier Province, the Punjab, United Provinces, Orissa and Sind, whilst the provinces of Bihar, Bengal, Central Provinces, Bombay, Madras, Assam and Burma recorded increases as compared with the previous year.

In the United Provinces, Bihar, Orissa, Central Provinces, Bombay, Sind, Madras and Burma, the daily average population was below the authorised accommodation. In North-West Frontier Province, Punjab, Bengal and Assam there was some over-crowding.

The constant sick rate per mille was the highest in Bengal, namely 38 ; for a majority of the provinces the rate ranges between 21 and 24, but in Burma and Central Provinces the rates are as low as 11 and 9 respectively.

The hospital admission rate dropped to 483 per mille during the year, the figures for the last year and for the quinquennium being 497 and 564 respectively. Bengal returned the highest rate, namely, 937 per mille, followed by 663 per mille in Sind and 574 per mille in the Punjab, whilst at the lower end of the scale are Madras 252 per mille, Central Provinces 232 per mille and Burma 142 per mille.

Malaria, as usual, was responsible for the largest amount of sickness, the hospital admission rate per mille being 131.

The lowest death rate during the year was 8 per mille recorded in United Provinces and the highest 19 per mille in the Central Provinces.

Prisoners Put On Weight

The following statement gives the percentages of prisoners showing gain or loss in weight on discharge, in the different provinces :

PROVINCES	GAINED WEIGHT	LOST WEIGHT
Madras	64	8
Orissa	60	9
Punjab	41	11
N. W. F. Province ..	53	11
U. P.	57	11
C. P.	62	11
Bihar	57	12
Bengal	49	12
Assam	59	13
Burma	60	15
Bombay	54	18
Sind	47	30

Weights not included above were stationary.

IN THE ANDAMANS

The convict population of the Andamans falls under two groups (1) those confined in cellular jails and associated barracks and (2) talabدارs living in barracks and married quarters and self-supporting convicts : the hospital admission rate, which is a ratio per 1,000 of the total number of admissions to the daily average population of the jail and the mortality rate for the two groups combined, was 549 per mille and 10 per mille as compared with 651 and 10 in 1935.

When these rates are separately shown for the two groups, the admission and mortality rates become 871 per mille and nil for the first group and 504 and 12 per mille for the second group. As a similar classification into two groups was not carried out last year comparative figures cannot be given for the two years. Taking the groups together, however, there is no indication of deterioration in the health of the Andamans jail population ; on the other hand, the statistics for the year show that the health of the population as a whole has improved.

There was no overcrowding in the Andamans cellular jail and associated barracks ; the total accommodation available during the year was for 1,062, including provision for 682 in the cellular jail and 380 in associated barracks, whilst the daily average strength was 815.

Satisfactory Health

The daily average sick numbered 25 per mille of the average strength. The total number of hospital admissions during the year was 710, giving an admission rate of 871 per mille of average strength. Fifty-five admissions were due to malaria, 52 to influenza, 30 to sandfly fever, 28 to respiratory diseases, 13 to diarrhoea, 4 to pyrexia of uncertain origin, 4 to dysentery and 4 to pneumonia and 1 each to tuberculosis of the lungs, anæmia and enteric fever. The general health of the inmates of the cellular jail was, on the whole, satisfactory, and there were no admissions for cholera, small-pox or plague.

In the settlement for talabدارs and self-supporting convicts the barracks and cells allowed 50 superficial feet per prisoner and had accommodation for a total of 4,635, but the number totalled only 2,427.

The total number of admissions to hospitals was 2,909 or 504 per mille against 2,950 during 1935 and 3,069 the average for the last four years. Of this total 668 admissions were for malaria, 162 for dysentery, 195 for respiratory diseases, excluding tubercle of the lungs and pneumonia, 67 for Weil's disease, 59 for diarrhoea, 38 for anæmia and debility, 20 for pneumonia, 17 for tuberculosis of the lungs, 7 for influenza and 5 for enteric fever. Cholera, smallpox and plague were absent.

Malaria Decreases

The total number of deaths in and out of hospital was 67 or 12 per mille of the average strength. The increase in the number of deaths during the year was partly due to the inclusion of deaths amongst prisoners repatriated on medical grounds to India, if these died within three months of repatriation. It was also partly due to a mild epidemic of Weil's disease, which was responsible for about 24 per cent of the total mortality. Deaths from different causes included pneumonia 11, tuberculosis of the lungs 7, dysentery 5, malaria and anæmia 3 each, respiratory diseases 2 and enteric fever 1.

Total admissions and deaths from malaria for the past five years are given below :—

YEAR.	TOTAL ADMISSIONS FOR MALARIA.	TOTAL DEATHS IN HOSPITALS.
1932	1,803	38
1933	1,621	16
1934	1,497	9
1935	1,353	7
1936	723	3

Energetic measures against this disease, including prophylactic and post-hospital issue of quinine, appear to have been responsible for the decrease in the admission and mortality rates.

JUTE TECHNOLOGICAL RESEARCH A FIVE YEAR SCHEME

Good progress has been made on the five year scheme of technological research on jute recommended by the Indian Central Jute Committee, which proposes to devote a sum of Rs. 1,80,000 per annum for the first three years and Rs. 1,00,000 per annum for the next two.

A programme of work for this scheme for the year 1938-39 has been drawn up.

The Technological Research Laboratories which it is proposed to set up at Tollygunge near Calcutta, will have two blocks of buildings; the first comprising the spinning laboratory, test laboratory Manager's Office, jute and machine godowns, and the second the Research Laboratories, Director's office, staff office, sample store and library. Detailed requirements for electric fittings, gas and water supplies, furniture and bench work, and apparatus have been worked out and much of the apparatus and equipment ordered. The Laboratories are expected soon to be complete.

The plan of building is based largely on the accommodation at the Technological Research Laboratories of the Indian Central Cotton Committee but adapted to suit the climatic conditions of Calcutta.

What Will Be Done

The programme of work to be carried out in the laboratories includes examination of typical samples representing the various main types of jute fibre with the object of determining what correlations there may be between the various physical and chemical characters and trade classifications. In the spinning laboratories an attempt will be made in the beginning to determine the minimum size of sample which will give reliable information regarding spinning behaviour and yarn quality. It is also proposed to have an investigation at an early date of the influence of certain valuable factors (machine speeds, etc.) on yarn quality in order that the degrees of control necessary in the various operations of a standard process may be determined. When this has been done, a standard process suitable for comparing the quality of small samples of fibre will be available, and it will be possible to proceed with the work of correlating spinning quality with measurable characters and the testing of new strains, etc.

One of the main functions of the technological research scheme is the testing of strains of jute produced by the Agricultural Research Staff of the Committee and samples received from other sources.

The total non-recurring capital cost of the whole project will be about Rs. 3,80,000.

Statistics And Information

The Indian Central Jute Committee hopes shortly to conclude an arrangement by which the newly appointed Indian Trade Commissioner to the United States of America will supply the Committee with periodical reports on all points bearing on the consumption of jute and jute goods in the North American Continent. Similar arrangements are likely to be made to obtain information from Europe, South Africa, Australia, and the Far East. A correspondent has already been appointed in the Argentine for this purpose.

The purpose of the Committee's Scheme for the collection and distribution of statistics and information regarding jute is to collect and make available to the various interests concerned as much reliable information as possible on the production and consumption of jute and its products.

TRAINING INDIANS UNDER ECONOMIC ADVISER

When the decision to create the post of Economic Adviser to the Government of India was announced to the Central Legislature in October, 1937, hopes were expressed on behalf of the Government that opportunity would be given for the training under him of selected young Indian Economists in methods of economic research. Sanction has consequently been accorded to the creation of one post of Statistician and four posts of Economic Assistants, the holders of which will work directly under the Economic Adviser.

The following candidates have been appointed to these posts on the recommendation of the Federal Public Service Commission and they joined their respective posts on September 1, 1938 :—

Statistician :

Dr. P. V. Sukhatme, B.Sc. (Bombay), Ph.D. (London).

Economic Assistants :

Mr. B. N. Adarkar, B.A. (Hons.) (Bombay), M.A. (Cantab.).

Mr. W. R. Natu, B.A. (Benares), B.Sc. Econ. (London).

Mr. Mohammad Shaghil, B.A. (Econ.) (Hons.) (Calcutta), M.A. (Econ.) (Aligarh), LL.B. (Aligarh).

Dr. B. G. Ghate, M.A. (Nagpur), LL.B. (Nagpur), Ph.D. (Econ.) (London).

THE LEGISLATIVE ASSEMBLY NO CRITICISM OF THE PRESIDENT OUTSIDE THE HOUSE

The following is the full text of the statement made in Central Legislative Assembly on September 12, by the Hon'ble Sir Muhammad Zafrullah Khan, Leader of the House, on the convention agreed to concerning the procedure to be followed when any member of the House desires to make any statement on any expression of opinion or statement made by the President :—

" Sir, on September 5, I brought to your notice and the notice of the House a statement which appeared in the papers of that morning issued by the Hon'ble the Leader of the Opposition and the Hon'ble the Leader of the Nationalist Party. That statement concerned the opinion delivered by you on September 5.

" Since then I have had the opportunity of discussing the matter with the leaders and representatives of the various parties in the House including the two leaders who issued the statement.

" I am now in a position to inform you and the members of the House that we are all agreed that it should not be open to any member of the House to criticise directly or indirectly outside the House any ruling given, opinion expressed or statement made, by the President in the discharge of his duties. If, however, any member desires to make a state-

ment regarding any expression of opinion or statement made by the President he shall be entitled to do so in the House by permission of the President. That being so I would submit that the matter need not be pursued further."

PAPER CONTAINERS FOR MILK AND GHEE

Investigations have been conducted at the Imperial Dairy Institute into the suitability of "Perga" paper containers for packing ghee and milk. The results show that "Perga" paper containers possess advantages over the ordinary glass bottles used for packing milk. The containers are light and easy to handle and transport, save labour in collecting and washing, are durable and easy to seal. The one serious drawback to their introduction in India would seem to be their initial cost.

But so far as packing of ghee is concerned, "Perga" containers were found to be unsatisfactory as they were not able to stand high temperature and rough handling.

The Indian Military Academy

(Continued From Page 114.)

Home Atmosphere

In the Academy an atmosphere and a curriculum have been evolved which give a training unique in India for comprehensive excellence. For example on the social side, officers of the Academy and their families play games with cadets and entertain them in their homes, which supplies a home life atmosphere, rarely found in other training colleges. This helps cadets to overcome shyness and to take their place with ease in any society.

The staff consists of a Brigadier as Commandant, an Assistant Commandant, an Adjutant, Quartermaster and sixteen officer instructors, all of whom are British officers belonging to either the Regular British or Indian Armies. All the Drill and Physical Training staff are British Warrant Officers or Non-Commissioned Officers and there is one British Company Sergeant Major in each Company.

On passing out of the Academy those cadets commissioned in the Engineers go to a Civil Engineering College for two years for a further period of training; others are attached to Regular British Army units for one year before being posted to their Indian units.

They all leave the Academy well qualified professionally and have the following words used by Field Marshal Sir Philip Chetwode in his inaugural speech to guide them in their future career :

" The safety, honour and welfare of your country come first always and every time. The honour, welfare and comfort of the men you command come next. Your own ease, comfort and safety come last always and every time."

Indian Information Series

VOL. III

Simla, October 1, 1938

No. 17

CONTENTS

	Page		Page
THE EUROPEAN CRISIS—White Paper	136	Viceroy's Visit to Srinagar	151
Loyal Messages from the Princes . . .	146	Colonel Muirhead's Indian Tour . . .	151
Quetta Earthquake Report	124	India's Mineral Wealth	151
Indian Interests Overseas	127	Government Help for Aviation . . .	153
Health Commissioner's Report	129	The "Defence Talks"	154
The Cattle Drain in India	130	Cash Certificates and Minors	154
Anti-T. B. Subscription List	149	Precious Stones by Air	155
South Indian Banking Crisis	150	Popular Radio	155
Indian Military Academy	150	Mr. Brij Lal Sharma	155
Mr. Jagadish Natarajan	151	Customs and Excise Revenue	155

A HUMAN DOCUMENT

Quetta Earthquake Report

RESCUE : CLEARANCE : RECONSTRUCTION

Complete Story For The First Time

Nobody except those who were present in the city immediately after the disaster can realise the immensity of the task and the variety of the difficulties which confronted Sir Norman Cater, then Agent to the Governor General in Baluchistan, and General Karslake, G. O. C.-in-Chief, when at 3 A.M. on May 31, 1935, the flourishing city of Quetta was reduced to a mere shambles by an earthquake.

But humanity has reasserted itself over nature's destruction and during these three years of solid work, much that was of old Quetta, with immense improvements and innovations has reappeared.

This is the dramatic story which Captain L. A. G. Pinhey, I.A., the Additional Political Agent, Quetta, tells in the Report on the Quetta Earthquake of May 31, 1935, published to-day.

Within 45 seconds, the earthquake caused the loss of between 25,000 and 30,000 lives (out of a population of about 50,000), the complete destruction of the cities of Quetta and Mastung and razed a large number of houses in surrounding villages. The Karez system of irrigation was badly damaged.

The faulty geological structure of Quetta and its neighbourhood is held responsible for the earthquake. This region has been liable to earthquakes from the earliest times. Owing to the local geological formation and the conformation of the mountain ranges between Peshawar and Karachi, there appears to be constant subterranean pressure in this Baluchistan plateau

which seeks periodical relief in rolling spasmodically onwards.

India has previously experienced two severe earthquakes, the Kangra Valley and the North Bihar, but these were eclipsed by the Quetta disaster.

By the greatest good fortune the severity of the shock stopped at the line of the Habib Nullah which runs between the City and the Cantonment, and with the exception of a few military bungalows, little damage was done on the Cantonment side, this was an inestimable blessing after the catastrophe. General Karslake utilised to the best advantage the services of the

twelve thousand able-bodied and disciplined troops, thus available.

The efficiency with which the catastrophe was taken in hand is suggested by the fact that *within three hours* areas had been allotted to various units for rescue work and a relief headquarters had been opened on the lawn of the ruined Quetta Club. And thenceforth the work went on in ceaseless relays by day and night.

General Karslake's Problems

The problems with which General Karslake battled were :—

- (1) Rescue of those buried under debris.
- (2) Organization of a Police force, since the Quetta force had been practically wiped out.
- (3) Re-establishment of communications with the outside world.
- (4) Immediate arrangements for the supply of food, shelter and medical attention to the innumerable victims. This was one of the greatest problems tackled. Regular convoys were sent out to the villages, and one food lorry and one lorry fitted up as an ambulance with a doctor attached visited the villages continuously for the first two weeks.

The average issue of rations each day in Quetta before the earthquake was 10,600. After the earthquake, on June 1, 33,000 rations were issued and on June 3, 102,500 rations. After this the number began to fall as refugees were evacuated from Quetta, but the average for the month of June was 44,000 rations per day.

- (5) Re-establishment of the water supply.
- (6) To stop the rush of people into Quetta, since rations available were limited.
- (7) Evacuation of survivors, particularly the injured, and the provision of food and clothing for their journey ; it was a remarkable achievement, says the Report, that six special trains left Quetta on June 2, and, at every station where the train stopped, voluntary helpers came forward with supplies of food and drink. Camps for these survivors had been established in the Punjab and Sind, and by June 4, 5,000 people had been evacuated.

(8) Prevention of looting. By June 14, a double aproned barbed wire fence had been put round the city which was patrolled day and night by pickets of infantry and civilian police. No unauthorised persons were allowed to enter the city and this cordon was flood-lit by electricity at night. Special guards had been provided for the protection of Banks. With few exceptions, these precautions were ample to keep out all undesirable persons from the city, and remarkably few cases of theft occurred.

Cavalry patrols were sent out to watch the entries into Quetta and, although a number of tribesmen were seen making towards Quetta in the early days, they dispersed as soon as they saw the patrols, and no trouble was experienced from the tribes living round about.

Viceroy's Fund Relief

The Viceroy's Quetta Earthquake Relief Fund, which was opened on June 3, 1935, and closed in March, 1936, raised Rs. 54 lakhs. Relief could not, however, wait until this fund had been accumulated.

The Fund was controlled by the Relief Commissioner with the Government of India, but the relief measures themselves were carried out by the local organisations.

Four definite stages were marked out in the administration of relief :—immediate relief distributed in the first few days ; formation of a Provincial Relief Committee and distribution of relief by them ; the abolition of the Provincial Relief Committee and the transfer of relief work to the Revenue Commissioner and the Additional Political Agent, and finally the transfer of the balance of relief moneys to the Agent to the Governor General in Baluchistan and the formation of the Central Trust Fund and Community Trust Funds.

Relief was granted both by local and central relief committees, the local committees dealt with :—

- (1) Immediate relief such as cost of food, clothing, medical comforts, railway facilities and small cash grants,
- (2) More extensive medical aid and appliances,
- (3) School-fees for children rendered destitute by the earthquake,
- (4) Temporary subsistence grants up to a limit of three months,
- (5) Small grants not exceeding Rs. 150 for the purchase of tools and equipment to artisans to enable them to restart work,
- (6) Expenses incurred in transfer from the devastated areas.

The Central Committee dealt with :—

- (1) Assistance to University students,
- (2) Evacuation from India of persons domiciled in England,
- (3) Larger grants to enable businessmen to reopen their business.

Out of the Viceroy's Fund's Rs. 54 lakhs, Rs. 35 lakhs were distributed up to August 27, 1936, by the central and local relief committees, when the balance of Rs. 19 lakhs was transferred to the control of the Agent to the Governor General in Baluchistan. Of this sum, Rs. 11 lakhs were set aside for assistance in rebuilding, Rs. 5 lakhs were kept in reserve, Rs. 2 lakhs were allotted for the rebuilding of religious and public institutions and Rs. 1 lakh for the Mission Hospital, Quetta.

Widows, Orphans, Aged, Infirm

Considerable difficulty was experienced in ensuring uniformity in the standard of relief. The earthquake was a great leveller, says the Report, wealth and position tumbled to the dust and were

“equal made

With the poor crooked scythe and spade ”.

It was impossible, however, for Government in the work of rehabilitation to emulate nature's example of terrible impartiality in the work of destruction. Some distinction had to be made in distributing awards ; the principle followed was to re-establish the person concerned in life but not to put him in a better position than that which he occupied before the earthquake.

The case of widows, orphans and aged and infirm persons rendered destitute by the earthquake was one of peculiar difficulty and hardship. Subsistence grants were made to them. To widows in addition, sewing machines were provided ; others qualified were recommended as midwives. This, however, could touch only the fringe of the problem. So it was decided to leave the actual method of relief to the discretion of local authorities. This, it was hoped, would provide elasticity and meet the individual needs of each case, as far as possible. Three and a half lakhs of rupees have accordingly been distributed to different provinces and administrations. The Punjab and Sind, which were naturally the worst sufferers, received Rs. 1,37,000 and Rs. 1,00,000, respectively.

Relief In The Villages

Besides relief in Quetta city and to sufferers who had been repatriated to their provinces, relief was also granted to villages in the Quetta sub-division and to the Kalat State.

A census of all the villages affected was taken and free rations were distributed from June 2 to the end of the month to the inhabitants of all badly affected areas. Twenty-seven thousand rupees worth of *Atta*, *Dal* and *Ghee* were issued free during this period.

Relief was also granted for damaged *karazes*, wells, water-mills and *bands*. Revenue remissions and *taqavi* suspensions were granted. To *zamindars* relief was given, for maintenance, for the purchase of bullocks and seeds ; a large quantity of seed in kind was distributed. Grants were made to affected persons to build huts. Although it was impossible to consider every application for a hut, it is calculated that over 90 per cent of those villagers who had lost their homes were provided with new huts by the Relief Fund.

In addition to these huts, 100 mosques were also sanctioned for the affected area of the Quetta tehsil at Rs. 70 per mosque.

Relief in Kalat State took the form of *karez* clearance, distribution of plough cattle and other animals, and of blankets, provision of free transport to Kachhi and Sind in the winter of 1935-36, construction of village huts and distribution of sewing machines to widows and destitute *Darzis*.

Havoc Of Oriental Sore

It was a difficult and complicated problem to ensure Quetta's health. All steps were taken against the possibility of the inevitable danger of epidemics, it is noteworthy that there no case

of cholera was reported and only one suspected case of small-pox. There were, however, many cases of malaria, due no doubt to the unhealthy conditions in which the whole population was living.

A distressing feature of the earthquake was the severe epidemic of Oriental Sore which manifested itself during the winter 1935-36, due, it is believed, to the bite of sand-flies. There was a great increase in sand-flies after the earthquake probably caused by the absence of sand-flies' natural enemies in the sites where the population lived in camp during the summer of 1935.

The exhumation of dead bodies and their clearance was a complicated problem, particularly on account of the risks involved ; here the work of a party of Rover Scouts under the leadership of Mr. Hogg, Scout Commissioner, deserves special mention. They volunteered for this dangerous job and the report records with satisfaction the absence of any serious case of illness or infection, either among the workers or among the general population from this source.

To prevent the spread of infection from corpses :—

- (1) Each volunteer was provided with leather gloves, overalls, gas-masks and nose-pads,
- (2) Listerine and other solutions were supplied for daily gargles,
- (3) Hooks were provided to handle bodies,
- (4) Arrangements for daily bathing and washing of clothes of the Exhumation Party were made,
- (5) Soiled bedding and clothes were burnt as soon as exhumed.

Earthquake Proof Buildings

To deal with the engineering problems involved in the clearance and re-occupation of the city, a special temporary earthquake division of the Public Works Department was created on March 13, 1936.

By February 1, 1937, only nineteen months after the disaster, the whole city was ready for permanent rebuilding and a permanent Building Code was brought into effect.

Permanent buildings are rigidly controlled under this code, and will all be earthquake-proof.

Enquiries are being received by the Quetta Reconstruction Committee about the construction of earthquake-proof buildings in Quetta town. It is suggested that nine different types of houses should be permitted and the specifications of these various types given in the Report is likely to be an invaluable guide for such construction in all parts of the world subject to earthquakes.

The Report, price Rs. 2-6-0, is available from the Manager of Publications, Civil Lines, Delhi.

INDIAN INTERESTS OVERSEAS

South Africa : Kenya : Zanzibar : Ceylon :

Fiji : Malaya : Trinidad : British Guiana

GOVERNMENT OF INDIA'S WATCH

There was no development of any importance affecting Indians in the Dominions of the British Empire, except in the Union of South Africa in the year 1937-38, says the Review of events affecting Indians in different parts of the British Empire, just published by the Government of India.

In South Africa, notwithstanding representations made by the Government of India, two Commissions have been appointed to investigate the problems of mixed marriages and of the acquisition of land by Indians in areas outside the purview of the "Gold Law".

The work of the Mixed Marriages Commission, says the Review, is not expected to be of much practical importance to the local Indian community, as such information, as is available, goes to show that mixed marriages are very rare among Indians in South Africa.

The enquiries of the Land Commission, on the other hand, are likely to be of considerable importance.

The proceedings of the Commissions are being watched by the Government of India and their Agent-General.

During the Parliamentary session a number of legislative measures, affecting Indian interests directly or indirectly, came up for consideration.

A Marketing Act was passed for the control of marketing of certain classes of agricultural produce, containing a provision that only Europeans might vote at meetings of producers called to discuss the merits of any particular scheme. An assurance has, however, been given by the Secretary for Agriculture that the Act will not be so worked as to affect prejudicially the interests of Indians.

To another measure, the Slums Amendment Act, the object of which was to give further powers to local authorities in the administration of the Slums Act, exception was taken by the South African Indian Congress, and certain amendments suggested by the Congress, regarding costs of arbitration and calculation of compensation, were accepted.

In the Arms and Ammunition Act, the object of which is to simplify procedure in regard to the issue of arms licences, an amendment was accepted to the effect that any refusal of licences to Indians by Magistrates should be subject to an appeal to the Minister.

Agent General Succeeds

The Unbeneficial Occupation of Farms Act, commonly described as a measure for slum clearance in rural areas, was another piece of legislation which aroused apprehension. The Bill provided that if any portion of agricultural land was subject to encumbrance or if the smallness of its area rendered the produce

insufficient for the livelihood of persons living thereon, the Minister could expropriate them on payment of compensation. It was felt that the Bill might be used to expropriate Indian farmers from valuable agricultural lands.

On representations made, the Minister for Lands gave an assurance to the Agent General that he would consult the latter before taking any action under the Act. A further assurance was given later that there was no intention of applying the provisions of the Act to any but Europeans, that the provisions of the Act would not be applied to Indians unless an appeal for assistance came from some responsible body, and that, should the remote possibility of expropriation occur, no steps would be taken until the question of future provision for the owners to be expropriated had been settled.

The Report of a Commission appointed by the Natal Administration to enquire into the system of education in that province, was published during the year. In so far as Indian education is concerned, the Commission recommended a programme of expansion, and, among other things, suggested the introduction of compulsory education in suitable districts with a corollary that compulsory education should also be free; and that health and social services be extended to Indian schools and that the Union Government be requested to increase the subsidy for Indian education.

In Kenya

In the other African countries it was in Kenya alone that the Indian community continued to be perturbed, mainly over the proposed Order-in-Council, which sought to define the boundaries of the parts of the Highlands to be set aside for non-native occupation. In a statement on the subject made by the Secretary of State for the Colonies, it was made clear that while there would be no legal colour bar, the existing administrative practice demarcating the areas as European areas, would continue in the future.

It would therefore appear, says the Review, that the objection to the Order-in-Council comes not so much from its

proposed legal content as from the moral reinforcement that its issue would provide to the existing administrative practice. Recognising the validity of this objection, the Government of India have again made representations to His Majesty's Government. No Order-in-Council has been promulgated yet.

Another matter which engaged the attention in Kenya, was the Transport Licensing Ordinance. Indians feared that in the attempt to prevent wasteful competition between the Railways and other forms of transport in Kenya, namely, lorries and dhows, Indians, who have considerable interests in the latter business, would be affected adversely. The other main objections were against the composition of the Transport Licensing Board and the provisions relating to the grant of exclusive licences.

Colonial Office Assurances

No representation from the local Indian community was received by the Government of India until after the Bill had passed its second reading, and been referred to a Select Committee. An endeavour by the Government of India to secure postponement of consideration of the measure was unsuccessful, but His Majesty's Government have stated that specific objections to any provisions of the Bill arising after enactment of the measure, would be examined, and, if necessary, amendments would be considered. The matter continued to receive the attention of the Government, who made further representations.

The Ordinance was passed in December 1937. Under its provisions, Indians are not precluded from appointment to the Transport Licensing Board, and one Indian was nominated to the first Board. Time has also been given for objections to be lodged, and provision made for an appeal to the Supreme Court against the decision of the Licensing Board.

There was some agitation in Tanganyika against the Native Marketing (Control and Marketing) Bill, but in the course of its passage through the Legislative Council, the Bill was substantially modified, and emerged as the Native Coffee (Control and Marketing) Ordinance, which applied control to coffee only. As a result of this amendment the Indian representatives in the Legislative Council stated that the new Bill satisfied their requirements.

Cloves In Zanzibar

In another territory in Eastern Africa, namely, the Island Protectorate of Zanzibar, events took a turn which threatened grave economic and financial consequences.

The scheme of clove trade control brought into force by the Zanzibar Clove (Purchase and Exportation) Decree failed to win the approval of the local Indian community, who organised a boycott of the clove trade. Simultaneously, a boycott of the import of Zanzibar cloves was also organised by the Indian National Congress in India.

In view of the prospect of grave economic and financial consequences to the Protectorate in the event of a continued deadlock and in view of further representations made by the Government of India, the Government of Zanzibar prepared a modified scheme for the control of the clove trade, the main feature of which was the withdrawal of the monopoly of the Clove Growers Association in the internal market. Producers indebted to Government were to sell only to the Clove Growers Association, but other producers were to be free to sell their cloves to the Clove Growers Association or to any licensed dealer. All cloves before ultimate export were to pass through the Clove Growers Association, but the Association itself was not to sell to principal overseas markets as long as the normal flow of exports was maintained.

As the result of a conference held in April-May 1938, at which Mr. G. S. Bozman was present as an observer on behalf of the Government of India, an agreement was reached between the Government of Zanzibar and the local Indian community, which, among other things, brought about the termination of the boycott of cloves in India.

The Bill relating to indebtedness and land alienation, which has been the subject of a long correspondence between the Government of India, His Majesty's Government and the Government of Zanzibar, was finally enacted in January 1938, as the Land Protection (Debts Settlement) Decree, which has met with approval of all communities of the Protectorate, as being a fair solution of an intricate and controversial problem.

Ceylon And Malaya

A careful watch over the interests of Indians resident in Ceylon and Malaya continued to be kept by the Agents of the Government of India.

Acute controversy was aroused during the year by the proposed amendment of the Village Communities Ordinance of 1924, which sought to extend the franchise, and with it the responsibility to pay tax, to Europeans and Burghers, but maintained the exclusion of Indian estate labourers.

The Government of India made representations against the discrimination involved. The Ceylon Government then amended the Bill so as to extend the franchise to all persons owning not less than five acres of land in a village area on which land tax is payable. But this proposal practically excluded the whole Indian estate community since the Indian estate labourers have little opportunity of acquiring land to the extent of five acres. The Bill passed its third reading on December 10, 1937, but His Excellency the Governor of Ceylon has reserved it for the signification of His Majesty's pleasure.

There was no recruitment of Indian labour for Ceylon. In September 1937, when the demand from the planters for extra labour from India became insistent, the Ceylon Government decided to permit the recruitment of

5,000 labourers, but the Government of India intimated that they would not feel justified in permitting further recruitment unless some revision of wages was promised, and unless Indian estate labourers were accorded the vote for village committees. The Government of Ceylon, while not promising any specific revision of wages, agreed to an enquiry by the Wages Boards; it is understood that preliminary steps are being taken. No assurance, however, was forthcoming regarding the franchise for village committees and the Government of India were, therefore, unable to agree to further recruitment.

Another incident which caused anxiety to Indians was the threatened ejection of certain Indian lease-holders at Kandapola. Thirty years ago, certain plots of marshy land, originally forming part of the Portwood Tea Estate, which had no particular use for them, were leased on temporary terms to some of the estate labourers. The lessees improved the land and found vegetable growing so lucrative that they gave up estate work. In 1929, the Estate wished to take back the land for tea cultivation, and finally in 1935 the Government of Ceylon acquired the land and served the Indian families (numbering about 34) with notices to quit on the ground that the Crown lands in question were acquired for the purpose of colonising middle-class Ceylonese.

While the action of the Minister was within his legal competence, the fact that it was proposed to take away from the Indian settlers the land that they had cultivated and give it to Ceylonese naturally caused resentment, and the Agent took up the matter with the Ceylonese Government.

The Government of India have received information that the Ceylon authorities are now considering the eviction of only 12 out of the 34 lessees on the ground that they are non-resident and are not cultivating the land themselves. The Agent has examined the cases of the 12 lessees and has found that there is no reason to press for reconsideration of the proposals in respect of four of them. The remaining eight cases are still under discussion with the Ceylon authorities.

The most important development in Malaya during the year was the reduction in wages on rubber estates, which eventually led to the prohibition of assisted emigration from India. In accordance with the recommendations made by the Right Honourable V. S. Srinivasa Sastri, the Malayan Government restored, with effect from April 1, 1937, the wages of Indian labourers in Malaya to the level at which they stood prior to 1930. The price of rubber, however, again declined towards the end of 1937, and in the early months of 1938, and this decline combined with large cuts in the quotas authorised by the International Rubber Restriction Committee brought the question of wages again to the fore. They have since been reduced and the matter is engaging the attention of the Government of India.

There is a steady improvement in the facilities provided on estates in Malaya, including

the opening of new schools, better salaries for teachers, and more dispensaries with better qualified dressers.

In Fiji And Trinidad

In Fiji, the most important problem affecting the Indian community, which still awaits solution and has continued to receive the close attention of the Government of India, is the question of land tenure.

Another important matter affecting Indians is a proposal to tighten existing immigration restrictions. The Government of India have the matter under correspondence with His Majesty's Government.

In British Guiana, as a result of a recommendation made by the Labour Disputes Commission, a Labour Inspectorate has been established.

In Trinidad, the Commission appointed to enquire into the labour disturbances, which were mainly confined to the oil-fields employing almost exclusively West Indian labour, made certain general recommendations aiming at the improvement of labour conditions, many of which should help to improve the condition of agricultural labourers who are largely drawn from the Indian community. The Government of India have asked to be kept in touch with the progress made towards the adoption of these recommendations, and were informed in March last that an Industrial Adviser had been entrusted with the duties proposed to be assigned to a Labour Department.

A local Commission has been appointed in Mauritius to investigate the labour disturbances, which took place on certain estates among casual labourers, many of whom were of Indian descent. The Report of the Commission is being awaited.

Lastly, the recent appointment of an Agent of the Government of India in Burma, the decision regarding which was taken this year, marks an important step and is of particular interest, in view of the recent happenings in that country.

HEALTH COMMISSIONER'S REPORT PRICE REDUCED

The annual report of the Public Health Commissioner with the Government of India for the year 1936, Volume I, is now on sale with the Manager of Publications, Civil Lines, Delhi. It is also obtainable from Provincial Government Book Depots and from private booksellers who stock Government publications.

In order to facilitate its purchase by local bodies, health officers, medical officers and private individuals a specially reduced price of Rs. 2 per copy, inclusive of packing and Indian postage, has been fixed for this publication.

THE CATTLE DRAIN IN INDIA

BY SAM HIGGINBOTTOM

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Mr. Sam Higginbottom, its author, has been in India for thirty-five years. He is president of Allahabad Christian College and principal of its Agricultural Institute.

The **INDIAN INFORMATION SERIES** reproduces Mr. Higginbottom's article as of interest to publicists, agricultural and educational authorities, and others, but Mr. Higginbottom's views are his own and should not necessarily be identified with those of Government agricultural experts.

According to a recent estimate India maintains 215,000,000 cattle out of the world's total cattle population of 690,000,000. Cattle compete with the human population for the produce of the land, with the result that both suffer. There are 60 cattle (all cattle figures throughout this article include water buffaloes) to every 100 human beings. And, though cattle do much of the farm work of India, they furnish considerably less food than do the cattle of other lands.

It is noteworthy that the one great country of the world which venerates the cow and regards it as an object of worship has the lowest average milk yield per cow and the lowest average milk consumption per person. Indian cattle could be improved by preventing the unfit from breeding, but many Hindus will not consent even to this modest control; they oppose selective breeding and demand that all cattle capable of reproduction be allowed to reproduce. The surplus cattle are in themselves enough to keep India poor.

Westerners faced with such a problem would undoubtedly slaughter all surplus cattle as beef, for which they would have a good market. But beef-eating is utterly repugnant to orthodox Hindus; it is indulged in only by the two hundred thousand odd Europeans in India (including the British army) and by Anglo-Indian and Muslim groups, who, however, do not eat nearly so much beef as is customary in Europe. In many Hindu-ruled Indian States, even where there are large groups of non-Hindus, the slaughter of cattle for any purpose is strictly forbidden. The value of beef is zero in many parts of the country; the vultures, hyenas and jackals get it after the natural death of the animal or low caste people may eat unbutchered beef. And to India no advice could be more offensive than the suggestion that the number of cattle should be reduced by slaughter for beef to be eaten within the country. The one way to reduce the cattle population of India which would not be offensive to Hindus would be to keep the unfit in endowed *gowshalas* and *pinjrapoles* (homes for aged, indigent, decrepit and homeless cows) until they died a natural death.

For a majority of the people of India the cattle question is thus primarily a religious one.

In the interests of religious liberty, this issue, which dwarfs all economic considerations, should be decided by those whose religion is involved.

It is not my intention to suggest anything that would wound the religious susceptibilities of any one, but merely to discuss the subject in its economic bearings, with as little reference to the religious as possible. But the economic consequences of the Hindu veneration of the cow are too great to ignore altogether in any discussion that aims to consider adequately this baffling subject of cattle in India.

Among India's vast cattle population are the best breeds to be found anywhere in the tropics—breeds that have been used to improve native cattle in the Philippines and other tropical and subtropical areas, in Texas and the southern United States. Several Indian breeds have excellent draft qualities: in fact no better draft cattle are to be found outside India than within her borders. Some Indian breeds have good points as beef cattle. Some have potential milk capacity, which might be developed to give the tropics as good a dairy animal as the temperate zone has today. But, although India has more distinct breeds than the West, the majority of these breeds at present are uneconomic and are not in the hands of owners who try to improve them.

Certain qualities possessed by most Indian cattle are very valuable and should be retained. The Indian cow has, for instance, learned to endure, with little or no diminution of milk yield, a hot climate which no breed of the temperate zone could endure and yet maintain milk flow. The Indian ox can work and retain health and weight at higher temperatures than the horse. Moreover, Indian cattle possess a degree of immunity to disease which enables them to survive where other animals would perish. And Indian cattle have developed a very high digestive efficiency. They can feed on coarse fodders and get from them enough to enable them to live and work, where the cattle of the temperate zone would rapidly lose weight. They can live on small amounts of poor-quality food for long periods, becoming almost skeletons on such treatment. yet, when better conditions return, they can recover as few European cattle could.

Nevertheless, in spite of these good qualities, and allowing for the few exceptions, the cattle of India are in the mass the poorest cattle, judged by economic returns, of any in the world. The Indian cow usually matures slowly, and may not give her first calf till between four and five years of age, as compared with maturity at two or three years for the breeds of temperate climes. This late maturity almost doubles the cost of raising a cow to the income-producing stage. Fortunately, the milk of Indian cows is fairly high in butter-fat content, but the average yearly yield is estimated at no more than from 600 to 750 pounds. It is difficult to see how such an amount of milk, only about a quart a day for the three hundred days of the lactation period, will pay for the cow's food and care. But few people in India count up profit or loss with respect to their cows: they do not keep them for profit. Many keep them for company or for religious services or to add social distinction to their owner. In reckoning the cost of Indian village cattle it is necessary to ascribe a zero value to all food grazed, and less than market value to grains and oil-cakes, and also to count the labor bestowed on herding, stabling, feeding and milking village cows as a labor of love.

If, without too much regard to actual conditions, one should arbitrarily ascribe a modest sum of, say, three rupees a month per animal, as a reasonable expenditure for adequate food and care, including wages to the herdsman, and compare the total cost with the return in milk, in offspring, in excreta for fuel and fertilizer, in work done by oxen, and in the hide and bones, it becomes evident that India is taxing herself very heavily indeed to maintain this enormous and inefficient cattle population. By taxing, I mean using up wealth, paying out money for which there is no direct return—if not actual cash, then labor and produce that might otherwise be put to profitable use.

As a matter of fact, each animal costs India much more than Rs. 3 a month: that is, it draws from the national wealth more than Rs. 3 a month which it does not repay. Were these cattle not drawing upon this wealth, it would be available for other purposes.

Certain studies have shown that India taxes herself in this fashion, to keep her surplus cattle, more than she is taxed for the maintenance of the Government of India.

People tell me the herdsmen of Bengal spend nothing on feed. They spend themselves very largely. Are they worth nothing? Were they not chained by custom to caring for these poor-quality animals they would be doing something of greater economic value. Because fencing is not common in India, large numbers of people are engaged in herding cattle—perhaps the least remunerative of all village occupations. Yet, in spite of so many herdsmen, the growing crops suffer from cattle trespass, a frequent cause of quarrels and murders. And the forests, too, suffer from cattle depredation. Thousands of square miles are recorded as forest that are so only by courtesy; for, owing to the custom of

allowing village cows to graze there, vast areas have become soil-denuded rock, gullies and eroded land.

Public opinion in India is generally with the cattle and against the forest: there is little consideration of the fact that its destruction causes irreparable damage, through the loss of soil by erosion and through the destructive floods that rush down from forest-denuded areas. Cattle herders often wilfully set fire to forests that are worth many-fold the value of any cattle that will ever graze in these despoiled areas.

India needs to consider in all seriousness the truth arrived at by the writer of the Book of *Genesis*, through the logical method of trial and error, that man must "have dominion over . . . every living thing that moveth upon the earth," including cattle. The greatest single cause of India's poverty today is perhaps her refusal to act upon this imperative. Today, in India, the animal world dominates man and, until the reverse comes about, little can be done to remove the degrading poverty which is the lot of so many of India's human beings. I know many Indian peasants who wearily and hopelessly beat out their lives in working to maintain cattle which should never have been born, which, when born, are destined to a cruel life of semi-starvation and which impose lifelong want and servitude upon their owners. Even in the *goushalas*, or at least many of them, the cattle are so pitifully underfed that they die of slow starvation, which is worse than sudden death.

Gandhi himself, in pleading some years ago for better cattle and better treatment for cattle, lamented the fact that India, despite her veneration for the cow, had the worst cattle in the world, whereas she should have the best.

Reduce Numbers

It has been suggested that with potential famine conditions due to climate and with inadequate veterinary service, the hazard in cattle life in India is unusually large, and therefore the large number of cattle might be taken as nature's way of providing for potential deficiency. I reply that reduction of numbers of cattle is the best protection against a fodder famine; again, a smaller number of cattle in good heart would be a much better protection against disease than a larger number of ill-fed, vitality-reduced animals that might fall an easy prey to cattle disease. Fodder famines and epidemic disease are nature's way of reducing the cattle population to reasonable numbers in India. Why should not man use his intelligence and avoid the terrible animal suffering inherent in nature's method?

If the export of cattle for beef were permitted, it would help reduce the surplus and immediately increase the value of all cattle in India at least two-fold. Retail prices of beef in India vary from one-half *anna* a pound for ordinary quality to one and a half annas for prime quality; and the wholesale price for animals sold for slaughter is usually less than half of this. The average value of the Indian cow at present may perhaps be set at 15 rupees. Some

may think this sum—which is about the value in India for hide and bones if properly taken care of after the natural death of the animal—is too low, but I know of places in India where mature cattle, kept in vast herds to produce dung cakes for fuel, are bought and sold for from 1 to 5 rupees each. The dung, which to many seems to justify the keeping of cattle even if they give no milk, brings no more than a rupee a month per animal near a city and less than half of that throughout the countryside.

All countries other than India maintain their cattle for definite practical purposes: they do not maintain large numbers of overaged, maimed, barren, surplus cattle. Aside from India, wherever the cattle population approaches the human population it is likely to be, as in the Irish Free State, Denmark and New Zealand, because of large exports of dairy produce which pay for imports of commodities necessary to maintain a high standard of living. In countries like Argentina, Canada and the United States of America, where the beef cattle outnumber the dairy cattle large herds of breeding animals are kept to produce animals for beef. In these countries, 98 per cent of the males born are beef before they reach an age of two years, and all the females that are of poor conformation also go for beef.

In most parts of Central Europe, inasmuch as the rural economy is carefully balanced, only enough male cattle are raised for stud purposes: all others are consumed as veal. Cows are, on the other hand used for a dual purpose, milk and draft, thus saving half the animal pressure on the land. All the cultivation is done by them. I noticed cows in good condition with beautiful udders, producing, I should estimate, from 4,500 to 8,000 pounds of milk a year, plowing, carting manure to the fields and carting the harvest home.

But of course this much more economical use of cattle is possible only because in Europe cattle are regarded primarily from the economic aspect. The Central European cows which, in addition to giving milk, provide the draft power, are much better fed and cared for than the overwhelming majority of the cattle in India. The great difficulty with India is that, as long as all the surplus cattle have to live, there is no inducement to increase the amount of work done by each one, whether dairy work or draft work.

India, of course, depends upon the ox for most of her farm power: for plowing and all the other activities of cultivation; raising irrigation water for crops from her 6,000,000 wells; threshing the grain by trampling it underfoot; taking the farm produce to market as a pack animal in roadless tracts, as a draft animal where there are roads. The annual money value of the labour of India's oxen and male buffaloes has been estimated to be 5,250,000,000 rupees, or about one-fourth the estimated value of India's annual crops. Not only because the ox is able to work at temperatures beyond the capacity of the horse but because he is so much cheaper to feed and can work with only a village-made, cheap wooden yoke, he is not likely to be dis-

placed either by machinery or by other power of animal origin.

But how many oxen does India need? The cultivated areas of India, including those in the Indian States, are estimated at about 300,000,000 acres. If we assume approximately one-half the cattle population to be male, then there are 107,500,000 males, or more than one ox (or buffalo) to every 3 acres cultivated. Assume also, however, that about 25 per cent are too young to work, or too old to work, or are needed as stud bulls or used for transport in cities, and you have left one pair of work oxen to cultivate each 7 acres of land and to take the surplus products to market. The yearly cost of maintenance per pair of work oxen may be taken as 150 rupees or about Rs. 22 per acre.

On certain scientifically worked farms, however, as high as from 15 to 30 acres per pair have been cultivated. If the average for India could be raised to 14 acres per pair instead of 7, the cost of cultivation per acre per pair would be reduced by one-half, a saving to the farmers under this head alone is roughly Rs. 2,834,000,000. In this case, moreover, only about half the present number of oxen would be required for the farm power of India. By following a system of rotation of crops designed to spread the work of cultivation over a longer period during the year, such a reduction in numbers of oxen would be well within the range of practical affairs.

Reasons

What keeps the area cultivated per pair of oxen low is not necessarily the lack of strength of the oxen, or the weakness of the farmer or scarcity of land (one-third of India's cultivable land lies waste, for lack of enterprise to develop it, for lack of people in some districts or because poverty prevents the necessary manuring or irrigation or because of general ignorance and inefficiency). A number of factors are involved, among them the smallness of the average holding (in the Ganges Valley, from three to five acres) and the fact that frequently the area farmed by one cultivator is broken up into widely scattered, small fields. Also, where there are no irrigation facilities, oxen frequently work for no more than sixty to eighty days in the year, yet they must be fed and tended for three hundred and sixty-five days. Another factor is the primitiveness of the farm implements and their lack of variety in India. Many farmers have only the little, wooden, iron-tipped plow that has been in use since before the time of Abraham, and a little plank leveler; in some parts, in addition, they use a small hoe cultivator. The primitive plow cannot be used at all when the ground is hard. When conditions are favourable, which may be for only a brief period during the year, it stirs the surface but it destroys only shallow-rooted weeds, leaving the deep-rooted weeds to rob the soil. It does not turn under the leaves, manure, weeds and other plant material lying on the surface.

Because of the limitations of his little, wooden, iron-tipped plow, the peasant must wait for the

softening of the ground by the rain ; he cannot work on his land when he knows plowing would be most beneficial, that is, during the hot, dry season when much organic matter might be turned under to enrich the soil. According to the Punjabi proverb, plowing is gold from January to the middle of May, silver from then on to the monsoon and copper after the monsoon breaks. The torrential rains that commonly usher in the monsoon are sometimes so continuous, for days together, that the farmer cannot cultivate his land until it is too late to plant his rainy season crop.

During the dry season many soils become unusually hard. This is not always due to extreme dryness : they may have salts in them that, upon drying, give a setting quality to the soil, as would mortar or cement. If such a soil could be broken up from six inches to a foot deep and left rough, not only would most of the valuable organic matter be turned under and saved to enrich the soil, but some wind-blown silt would be caught on the lee side of the lumps and would add to the manure content ; further, when the rains fell, most of the water would penetrate the ground, and there would be little run off. This conserved moisture would be available for crop use later on. But on unplowed soils the torrential rains carry off the valuable organic matter along with a sheet of the best top soil, since the ground has not been opened up to allow percolation. It is estimated that the Ganges carries to the sea eight times as much silt as the Mississippi, and the catchment area of the Ganges is less than one-third that of the Mississippi. Most of this Ganges silt is rich top soil. This accounts in large measure for the average low yields of crops in India, where, with proper care of the soil and erosion prevention, yields could be multiplied several-fold.

Ox-drawn implements that will break this hard soil have now been designed and are in use, but better tools, to be effective, need better oxen. It takes several pairs of oxen of the usual village type to pull these hard-soil-breaking plows, which can, however, be drawn by a single pair of oxen of sufficient strength. Better oxen are largely a matter of breeding and feeding. Draft power is almost in direct proportion to weight, and better feeding from birth would greatly increase the size and weight of the oxen. In spite of the essential conservatism of India's farmers, slowly the conviction is growing, among the more progressive of them, that better but fewer oxen, employed for a longer working period during the year, will prove to be more profitable.

The Allahabad Agricultural Institute, with which I am associated, maintains forty oxen and ten buffaloes to do its work. It keeps careful accounts of all food supplied and all expenses such as shoeing, veterinary service, care, interest and depreciation. Each ox is charged with food and care and credited at market rates with all work done. Last year was a good year for the oxen, since they worked nearly every day they could work (they get Sunday off regularly, also a few other holidays and wet days),

actually 292 days' work during the year. Their net earnings above cost were 500 rupees or an average annual profit per work animal of 10 rupees.

Several men who get their living by carting have told me that this past year has been a bad one for them, that they are glad to get work that will do no more than pay for the feed of their oxen. The motor lorry is displacing the ox cart. In the case of the large oxen, three oxen to a cart, common in the cities of North India, when conditions are favourable, each ox can make a profit of 1 rupee, four annas, per year or 8 rupees, twelve annas, for his working lifetime of seven years.

Ox Or Cow ?

I think it is well established that a good milk cow produces more profit in one lactation than an ox does in his whole lifetime. Yet to the average Indian the cow is considered to be of much less economic value than the ox—a natural enough opinion in view of the poor milk-giving capacity of most Indian cows. At present not 10 per cent of the cows of Indian breeds can make a profit for a professional dairyman in an Indian city. But experience has shown that imported bulls of almost any of the good dairy breeds of the West mated even to poor Indian cows give offspring, the milk-giving capacity of which is several-fold that of their dams. It is not uncommon to find an Indian cow, giving from 1,000 to 2,000 pounds of milk a year, producing, when mated to an imported dairy bull, offspring giving from 6,000 to 13,000 or 14,000 pounds of milk in a lactation period of three hundred days. Even when all the risks have been run and the high price has been paid for importation, over 90 per cent of the cross-bred cows are profit-makers.

India today is estimated to produce annually approximately 29,000,000 long tons (a long ton is 2,240 pounds) of milk from her 80,000,000 odd cows in milk, or about 750 pounds of milk per cow per year. Another estimate arrived at in a different way gives the average yield per cow in India as 600 pounds of milk per lactation. Both these figures reveal the poor average milk-giving capacity of the Indian cow. Both estimates bear out the results of my own inquiries and observations over the past thirty-five years, that is, that over 90 per cent of the cows of India do not pay for their keep. They are an economic drain on the country.

It is axiomatic that low-yielding, small-value cows produce expensive milk, whereas high milk-capacity, high-value cows produce cheap milk. Milk in most parts of India at wholesale is much more expensive than in the United States, Canada or the dairy countries of Europe, or in Australia or New Zealand. And it is almost impossible to buy sanitary milk in any one place in India in amounts sufficiently large to allow a butter, cheese or condensed-milk factory to run at a profit. Yet, with better quality cows and scientific feeding, India could produce milk as cheaply as any country in the world. India can graze her cattle for twelve months in the year, if the grazing area is properly rotated and

managed, and she has some of the best grasses in the world if properly treated.

How To Live Longer ?

Recent estimates give the average *per capita* consumption of milk and its products in India at 7 ounces per day. India is very largely a vegetarian country: for most of the people, milk is the only source of animal protein. In seventeen countries for which records are available, the *per capita* consumption of milk and its products varies from 63 ounces in Finland, 61 in Sweden and 56 in New Zealand to 39 in Great Britain, 35 in the United States, 30 in France and 10 in Italy. But all these countries are, generally speaking, non-vegetarian; hence milk does not have the same relative importance in their diet as it does in vegetarian India. For India's needs to be met in any reasonable manner, her daily consumption of milk should be raised anywhere from five- to seven-fold, the higher the better. May there not be some relationship between expectancy of life and average milk consumption? The three nations that consume the most milk have the greatest expectancy of life of any people in the world, all of them over sixty years, whereas the countries with the lowest expectancy of life (India, twenty-six years) have the lowest average consumption of milk.

The capacity of any cow to yield milk is an inherited character: it is, therefore, fixed for every cow. Scientific feeding of a dairy cow consists of two parts, one in giving her enough food to maintain her body in good condition, the other, in giving just enough additional food to enable her to yield milk up to her capacity. Take cows of equal weight but differing inherited milk capacity—all will need the same amount of daily food to maintain the body in health, say eight pounds of meal and cake, and thirty pounds of silage and hay, value 6 annas. The milk ration will be, in addition, one pound of ration for each three pounds of milk. For a cow to pay, she must give a sufficient amount of milk to reimburse her owner for the cost of the maintenance ration, *plus* the cost of milk ration, *plus* allowance for her dry period of sixty-five days and care for the whole year. There are two acts of unwisdom in cow care—one, to overfeed a cow with low inherited milk capacity in the hope of getting more milk, the other, to underfeed a cow below her inherited capacity to yield milk.

What A Bad Bull Can Do

It is only through the use of proved stud bulls as sires that herd improvement can be progressively upward. A proved dairy sire is one which is used for few matings until his first daughters come into milk. If a majority of these daughters give more milk than their dams, the increase of milk can be ascribed to the sire, and it is safe to use him for dairy herd improvement. If a majority of the early daughters give less milk than their dams, the decrease can be attributed to the sire and he should be sent to the plow. A bad bull at the head of a herd can in one generation undo what has taken several generations to build up.

Difference of opinion exists in India as to what the next step should be in cattle improvement. Some breeders think that no more foreign cattle should be imported but instead all effort should be concentrated on improving the Indian breeds of cattle, which have already adapted themselves to the environment and can live and thrive under conditions where imported cattle suffer and deteriorate. There is much to be said for this viewpoint; for it is true that imported cattle and cross-bred cattle have so far not accomplished as much of permanent value as was expected. It is risky and expensive to import cattle. Many of the imported animals have died before they have had any opportunity to leave any progeny. Many of the half-breeds of the first generation have been good cows but could not transmit the improvement to their descendants. Succeeding generations have grown progressively worse. Another objection is that the cross-bred bullock is alleged not to be so good as the purely Indian. Some matings of certain breeds of foreign with indigenous cattle result in bullocks which cannot stand the climate as well as the local ox, and rapidly lose constitution, although other combinations seem almost or entirely equal to full-blooded Indian cattle.

Under certain conditions in India, that is, where cattle food is cheap, land values are low, wages and standard of living low and the price for milk is fairly good, say 12 pounds to the rupee (though usually, where the first-mentioned conditions obtain, milk sells anywhere from 32 to 40 pounds per rupee), cows giving 750 pounds of milk per year may be considered to be marginal cows—that is, while they yield their owner no profit, and keeping them does not contribute anything to an improved standard of life, yet they involve him in no loss. A cow giving 6,000 pounds of milk a year selling at 21½ pounds per rupee will give a net profit of about 100 rupees, a cow giving 9,000 pounds a profit of 480 rupees.

In certain carefully managed dairy herds of Indian cows where selective breeding has been followed for years, the following results have been obtained at various agricultural stations: at Lyallpur, the average daily yield per cow in milk has risen in twenty-two years from 5·6 pounds to 17·15; at Karnal, in twelve years from 8·8 pounds to 14·1; at Pusa, in twenty-three years from 5 pounds to 24; at Ferozepore, in twenty years from 11·3 pounds to 22·6; at the Agricultural Institute, Allahabad, in fifteen years from 5 pounds to 10.

This proves that pure Indian cows are capable of improvement. Unfortunately, the places where the cattle are being improved in this manner are so few, and the herds so small in comparison to the total number of cows in India, that little impression on Indian milk production as a whole has yet been made. Furthermore, this improvement has been brought about at such great expense as to make similar cattle improvement financially impossible for all except a comparatively few rich men, or adequately financed institutions or government departments. Nevertheless, every effort must be put forward to

increase the average daily yield of Indian cows, especially in the villages, where most of the people live, where milk is usually so scarce and dear, where mortality figures for children up to the age of five are among the highest in the world. Considering the total number of Indian cows, even a small increase per cow per year means a very large amount of additional milk.

There is much to be said both for and against the plan of calling a halt to importation of foreign breeds and concentrating upon the improvement of Indian breeds of cattle. Those who urge still further importation are chiefly interested in obtaining cheap, sanitary milk in quantity in the cities.

When cross-breeding began in India, men had only their imaginations to go on, but now a sufficient number of foreign bulls of different breeds have been imported and mated with different Indian breeds so that a certain amount of evidence has accumulated as to what combinations will succeed. To one who travels over India nothing is more striking than the wide variation in the size and quality of the cattle of different tracts of India. Some parts, like the Punjab and the deserts of Rajputana, Jodhpur and Bikanir, produce some of the finest draft cattle in the world. Other parts, like the Kumaon Hills and the Ganges Valley east of Cawnpore, produce some of the smallest and most useless cattle in the world. It was thought that poor-quality cattle must be the result of bad breed and poor feed, and so some of the best cattle of the best breeds of India were brought into these tracts where the small cattle exist, with the hope of improving the local cattle. These good breeds were well fed and well cared for in their new environment; yet their offspring from generation to generation grew progressively worse compared to their parents. This suggests that it is not the breed or the feed that is at fault, but that some serious deficiency in the soil itself affects the grains and fodder grown on it. Happily the livestock officials of Government are now instituting research to find a remedy.

Lessons of Imported Bulls

Since dairy bulls were first imported into India, it has been learned that the inheritance of the milk-giving capacity passes from mother to son and son to daughter, or is transmitted in alternating sexes. According to this law, it now appears that the daughters of imported bulls, mated to Indian cows, have the milk inheritance of the sire and not of the mother. A certain cow that gave 400 pounds of milk in a lactation period was, for instance, mated to a Holstein-Friesian bull, and the daughter gave over 8,000 pounds of milk with her first calf. The brother of this half-bred cow, on the other hand, was used as a sire, but none of his daughters gave as much as 1,000 pounds of milk a year. Before this important discovery of the alternation between the sexes of the inheritance of the milk-giving capacity, people thought, seeing the wonderful results in the daughters of these matings, that the half-bred son of such parentage, mated to the half-bred cow, would give a yield of milk somewhere halfway between the

imported bull's milk inheritance and the original Indian cow's milk inheritance, but such proved not to be the case. The daughter of a mating of a half-bred bull to a half-bred cow almost invariably reverted to the grand-dam's milk capacity.

It is now seen that what is needed to establish a new breed having the immunity to disease, ability to stand the climate and high digestive capacity of the Indian cattle, *plus* the milk inheritance and early maturity of the West, is to import not only foreign bulls but also a few foreign cows, which could be mated to the best bulls of Indian breeds. The half-bred bull of a mating of Indian sire and imported high milk-yielding dam would carry his mother's high milk-giving capacity. If he were mated to a half-bred daughter of an imported bull and an Indian cow, both of these half-breeds, having in their inheritance the characters for milk capacity and early maturity, on both sides, would pass it on to their progeny.

For a number of years the government has maintained at great expense an institution for the scientific training of dairymen. But when such a trained dairyman is ready to open his own dairy, what are the conditions with which he is faced? If he is given unlimited choice, except from a few selected herds that have been built up in government and private institutions, he cannot buy a sufficient number of cattle of high milk-giving capacity to enable him to earn a modest living. What is the good of training men if, when they are trained, they cannot earn a living in their chosen field? Until Indian breeds are sufficiently improved and profitable cows sufficiently numerous to enable qualified dairymen to get a living, there is a place for the cross-bred cow and therefore cross-breeding should be encouraged. Experience, observation and research will reveal whether the cross-breed has any permanent contribution to make to the solution of India's cattle problem.

In addition to the cow there are two other important milk producers in India, the goat and the buffalo. The goat is called the poor man's cow, for the reason that the poor man who keeps a goat usually feeds it on somebody else's food. This is one reason, perhaps, why India has the largest goat population of any country in the world. Another is that in the East the flesh of the goat is generally preferred to mutton. The goat is so destructive, so much forest has been spoiled by it, so much land ruined and turned into desert, that it might well be called the poor man's cow for the very cogent reason that it will make any people poor who have to keep goats.

In many parts of India the buffalo is also an important source of milk. Its milk is in fact richer than cow's milk, with from 6 to 9 per cent of butter fat. Frequently Indian farmers keep a buffalo to provide milk for the family and a cow from which they hope to raise an ox—for in spite of its greater size the male buffalo is not such a good draft animal as the ox. Its habit is to lie in water all day, with only the muzzle exposed, and graze at night: it can-

THE EUROPEAN CRISIS

The British White Paper In Full

THE FACTS PLACED BEFORE THE WORLD

What Mr. Neville Chamberlain Said To Herr Hitler

We here publish the documents of the British White Paper laid before Parliament on September 28.

Sub-titles have been inserted and certain paragraphs printed in bold face type to facilitate reading, but these modifications do not appear in the originals and they are not to be taken as an official expression of opinion.

**LORD RUNCIMAN TO
MR. NEVILLE CHAMBERLAIN
SEPTEMBER 21**

When I undertook the task of mediation in the controversy between Czechoslovakia and the Sudeten German Party, I was of course left perfectly free to obtain my own information and to draw my own conclusions. I was under no obligation to issue any kind of report. In the present circumstances, however, it may be of assistance to you to have the final views which I have formed as a result of my mission, and certain suggestions which, I believe, should be taken into consideration if anything like a permanent solution is to be found.

An Old Problem

The problem of political, social and economic relations between the Teuton and Slav races in the area which is now called Czechoslovakia is one which has existed for many centuries with periods of acute struggle and periods of comparative peace. It is no new problem and, in its present stage, there are, at the same time, new factors and also old factors which would have to be considered in any detailed review.

When I arrived in Prague, at the beginning of August, the questions which immediately confronted me were: (1) Constitutional, (2) Political, and (3) Economic.

The constitutional question was that with which I was immediately and directly concerned. At that time it implied provision of some degree of home rule for Sudeten Germans within the Czechoslovak Republic; the question of self-determination had not yet arisen in an acute form. My task was to make myself acquainted with the history of the question with the principal persons concerned, and with the suggestions for a solution proposed by the two sides, viz., by the Sudeten German Party in a "sketch" submitted to the Czechoslovak Government on June 7, (which was by way of embodying the eight points of Herr Henlein's speech at Karlsbad) and by the Czechoslovak Government in their draft Nationality Statute Language Bill and Administrative Reforms Bill.

The "Fourth Plan"

It became clear that neither of these sets of proposals was sufficiently acceptable to the other side to permit further negotiations on this basis, and the negotiations were suspended on August 17. After a series of private discussions between the Sudeten leaders and the Czech authorities, a new basis for negotiation was adopted by the Czechoslovak Government, and was communicated to me on September 5, and to the Sudeten leaders on September 6. This was the so-called fourth plan.

In my opinion—and, I believe, in the opinion of the more responsible Sudeten leaders—this plan embodied almost all the requirements of the Karlsbad eight points, and with a little clarification and extension could have been made to cover them in their entirety. Negotiations should have at once been resumed on this favourable and hopeful basis; but little doubt remains in my mind that the very fact that they were so favourable operated against their chance with the more extreme members of Sudeten German Party.

It is my belief that incidents arising out of the visits of certain Sudeten German Deputies to investigate into the case of persons arrested for arms smuggling at Mährisch-Ostrau were used in order to provide an excuse for the suspension, if not for the breaking off, of negotiations. The Czech Government, however, at once gave way to demands of the Sudeten German Party in this matter, and preliminary discussions of the fourth plan were resumed on September 10. Again, I am convinced that this did not suit the policy of the Sudeten extremists and that incidents were provoked and instigated on September 11 and, with greater effect after Herr Hitler's speech, on September 12.

Fresh Demands

As a result of the bloodshed and disturbance thus caused, the Sudeten Delegation refused to meet the Czech authorities as had been arranged on September 13. Herr Henlein and Herr Frank presented a new series of demands—withdrawal of State police, limitation of troops to their military duties, etc., which the Czechoslovak Government were again prepared

to accept on the sole condition that a representative of the Party came to Prague to discuss how order should be maintained. On the night of September 13, this condition was refused by Herr Henlein, and all negotiations were completely broken off.

It is quite clear that we cannot now go back to the point where we stood two weeks ago, and we have to consider the situation as it now faces us.

With the rejection of the Czechoslovak Government's offer on September 13, and with the breaking off of negotiations by Herr Henlein, my functions as a mediator were, in fact, at an end. Directly and indirectly, the connection between the Chief Sudeten leader and the Government of the Reich had become the dominant factor in the situation; the dispute was an internal one. It was not part of my function to attempt mediation between Czechoslovakia and Germany.

The responsibility for the final break must, in my opinion, rest on Herr Henlein and Herr Frank, and upon those of their supporters inside and outside country who are urging them to extreme and unconstitutional action.

The Sudeten Case

I have much sympathy, however, with the Sudeten case. It is a hard thing to be ruled by an alien race; and I have been left with the impression that Czechoslovak rule in the Sudeten area for the last twenty years, though not actively oppressive and certainly not "terroristic", has been marked by a tactless lack of understanding, by petty intolerance and by discrimination to the point where the resentment of the German population was inevitably moving in the direction of revolt. The Sudeten Germans felt, too, that in the past, they had been given many promises by the Czechoslovak Government but that little or no action had followed these promises.

This experience had induced an attitude of unveiled mistrust of leading Czech statesmen. I cannot say how far this mistrust is merited or unmerited, but it certainly exists, with the result that, however conciliatory their statement, they inspire no confidence in the minds of the Sudeten population. Moreover, in the last elections of 1935, the Sudeten German Party polled more votes than any other single Party; and they actually formed the second largest Party in the State Parliament. They then commanded some 44 votes in a total Parliament of 300. With subsequent accessions, they are now the largest Party. But they can always be out-voted, and consequently some of them feel constitutional action is useless for them.

Grievances Accumulated

Local irritations were added to these major grievances. Czech officials and Czech Police, speaking little or no German, were appointed in large numbers to purely German districts. Czech agricultural colonists were encouraged to settle on land transferred under land reform in the middle of German populations. For

the children of these Czech invaders schools were built on a large scale. There is a very general belief that Czech firms were favoured as against German firms in the allocation of State contracts and that the State provided work and relief for Czechs more readily than for Germans.

I believe these complaints to be in the main justified. Even as late as the time of my mission, I could find no readiness on the part of the Czechoslovak Government to remedy them on anything like an adequate scale.

All these and other grievances were intensified by the reaction of the economic crisis on Sudeten industries which form so important a part of the life of the people. Not unnaturally, Government were blamed for the resulting impoverishment. For many reasons, therefore, including the above, the feeling among Sudeten Germans until about three or four years ago was one of hopelessness. But the rise of Nazi Germany gave them a new hope. I regard their turning for help towards their kinsmen and their eventual desire to join the Reich as a natural development in the circumstances.

At the time of my arrival, the more moderate Sudeten leaders still desired a settlement within the frontier of the Czechoslovakian State. They realised what war would mean in the Sudeten area which would itself be the main battlefield. Both nationally and internationally, such a settlement would have been an easier solution than territorial transfer. I did my best to promote it and up to a point with some success, but, even so, not without misgiving as to whether when agreement was reached it could ever be carried out without giving rise to a new crop of suspicions, controversies, accusations and counter-accusations. I felt that any such arrangement would have been temporary, not lasting.

This solution in the form of what is known as "Fourth plan" broke down in the circumstances narrated above, the whole situation, internal and external, had changed, and I felt with this change my mission had come to an end.

Rioting

When I left Prague on September 16, the rioting and disturbances in the Sudeten areas, which had never been more than sporadic, had died down. A considerable number of districts had been placed under a regime called Standrecht (amounting to Martial Law). The Sudeten leaders, at any rate the more extreme among them, had fled to Germany and were issuing proclamations defying the Czechoslovak Government. I have been credibly informed that, at the time of my leaving, the number of killed on both sides was not more than 70.

Unless, therefore, Herr Henlein's Freikorps are deliberately encouraged to cross the frontier, I have no reason to expect notable renewal of incidents and disturbances. In these circumstances, the necessity for the presence of State Police in these districts should no longer exist. As State Police are extremely unpopular among

German inhabitants and have constituted one of their chief grievances for the last three years, I consider they should be withdrawn as soon as possible. I believe their withdrawal would reduce causes of wrangles and riots.

Further it has become self-evident to me that those frontier districts between Czechoslovakia and Germany where the Sudeten population is in an important majority should be given full right of self-determination at once. If some cession is inevitable, as I believe it to be, it is as well that it should be done promptly and without procrastination. There is real danger, even danger of civil war, in the continuance of a state of uncertainty.

Consequently there are very real reasons for a policy of immediate and drastic action. Any kind of plebiscite or referendum would, I believe, be a sheer formality in respect of these predominantly German areas. A very large majority of their inhabitants desire amalgamation with Germany. The inevitable delay involved in taking a plebiscite vote would only serve to excite popular feeling, with perhaps most dangerous results. I consider, therefore, that these frontier districts should at once be transferred from Czechoslovakia to Germany and further that measures for their peaceful transfer, including the provision of safeguards for the population during the transfer period, should be arranged forthwith by arrangement with the two Governments.

"Absolute Separation Inconceivable"

The transfer of these frontier districts does not, however, dispose of the final question of how the Germans and Czechs are to live together peacefully. Even if all the areas where Germans have a majority were transferred to Germany, there would still remain in Czechoslovakia a large number of Germans and in areas transferred to Germany there would still be a certain number of Czechs. Economic connections are so close that an absolute separation is not only undesirable but inconceivable; and I repeat my conviction that history has proved that in times of peace the two peoples can live together on friendly terms. I believe that it is in the interest of all Czechs and of all Germans alike that these friendly relations should be encouraged to re-establish themselves; and I am convinced that this is the real desire of the average Czech and German. They are alike in being honest, peaceable, hard-working and frugal folk. When political friction has been removed on both sides, I believe they can settle down quietly.

For those portions of territory, therefore, where German majority is not so important, I recommend that an effort be made to find a basis for local autonomy within the frontier of the Czechoslovak Republic on the lines of the "fourth plan", modified so as to meet the new circumstances created by the transfer of preponderantly German areas.

As I have already said, there is always a danger that agreement reached may lead to further divergence in practice. But I think in a more peaceful future this risk can be minimized.

Czechoslovakia's Future

This brings me to the political side of the problem which is concerned with the question of the integrity and security of the Czechoslovak Republic, especially in relation to her immediate neighbour. I believe that here the problem is one of removing a centre of intense political friction from the middle of Europe. For this purpose it is necessary permanently to provide that the Czechoslovakian State should live peaceably with all her neighbours and that her policy, internal and external, should be directed to that end. Just as it is essential for the international position of Switzerland that her policy should be entirely neutral, so an analogous policy is necessary for Czechoslovakia—not only for her own future existence but for the peace of Europe.

Recommendations

In order to achieve this I recommend:

- (1) That those parties and persons in Czechoslovakia who have been deliberately encouraging a policy antagonistic to Czechoslovakia's neighbours should be forbidden by the Czechoslovakian Government to continue their agitation, and that if necessary legal measures should be taken to bring such agitation to an end.
- (2) That the Czechoslovakian Government should so remodel her foreign relations as to give assurance to her neighbours that she will, in no circumstances, attack them or enter into any aggressive action against them arising from obligations to other States.
- (3) That the principal Powers acting in the interest of the peace of Europe should give to Czechoslovakia guarantee of assistance in case of unprovoked aggression against her.
- (4) That a commercial treaty on preferential terms should be negotiated between Germany and Czechoslovakia if this seems advantageous to the economic interests of the two countries.

The Economic Problem

This leads me to the third question which lies within the scope of my enquiry, viz., the economic problem. This problem centres on distress and unemployment in the Sudeten area, a distress which has persisted since 1930 and is due to various causes. It constitutes a suitable background for political discontent. It is a problem which exists; but to say that Sudeten German question is entirely or even in main an economic one is misleading. If a transfer of territory takes place it is a problem which will for the most part fall to the German Government to solve.

If the policy which I have outlined above recommends itself to those immediately concerned in the present situation, I would further suggest:

- (a) That a representative of the Sudeten German people should have a permanent seat in the Czechoslovakian Cabinet.
- (b) That a Commission under a neutral Chairman should be appointed to deal with the question of delimitation of areas to be transferred to Germany and also with the controversial point immediately arising from the carrying out of any agreement which may be reached.
- (c) That an international force be organised to keep order in districts which are to be transferred pending actual transfer, so that Czechoslovakian State police, as I have said above, and also Czechoslovakian troops may be withdrawn from this area.

I wish to close this letter by recording my appreciation of the personal courtesy, hospitality and assistance which I and my staff received from Government authorities, especially Dr. Benes and Dr. Hodza, from representatives of Sudeten German Party with whom we came into contact, and from a very large number of other people in all ranks of life whom we met during our stay in Czechoslovakia.

THE ANGLO-FRENCH PROPOSALS, SEPTEMBER 19

LORD RUNCIMAN'S PLAN APPROVED

The representatives of the French and British Governments have been in consultation on the general situation and have considered the British Prime Minister's report of his conversation with Herr Hitler. The British Ministers also placed before their French colleagues their conclusions derived from the account furnished to them of the work of his mission by Lord Runciman.

We are both convinced that after recent events the point has now been reached where further maintenance within boundaries of the Czechoslovak State of districts mainly inhabited by Sudeten Deutsch cannot in fact continue any longer without imperilling the interests of Czechoslovakia herself and of Europe's peace. In the light of these considerations both Governments have been compelled to conclude that maintenance of the peace and safety of Czechoslovakia's vital interests cannot effectively be assured unless these areas are now transferred to the Reich.

This could be done either by direct transfer or as the result of a Plebiscite. We realise the difficulties involved in a plebiscite and we are aware of your objections already expressed to this course, particularly the possibility of far-reaching repercussions if the matter were treated on the basis of so wide a principle. For this reason, we anticipate, in the absence of indication to the contrary, that you may prefer to deal with the Sudeten Deutsch problem by the method of direct transfer, and as a case by itself.

The area for transfer would probably have to include the areas with over 50 per cent. of German inhabitants, but we should hope to arrange by negotiation provisions for the adjustment of frontiers, where circumstances render it necessary, by some international body including a Czech representative. We are satisfied that the transfer of smaller areas based on a higher percentage would not meet the case.

The international body referred to might also be charged with questions of the possible exchange of population on the basis of the right to opt within some specified time limit.

We recognise that if the Czechoslovak Government is prepared to concur in the measures proposed involving material changes in the conditions of the State, they are entitled to ask for some assurance of their future security.

International Guarantee

Accordingly, His Majesty's Government in the United Kingdom would be prepared as a contribution to the pacification of Europe to join in an international guarantee of the new boundaries of the Czechoslovak State against unprovoked aggression.

One of the principal conditions of such a guarantee would be the safeguarding of the independence of Czechoslovakia by the substitution of a general guarantee against unprovoked aggression in place of existing treaties which involve reciprocal obligations of a military character.

Both French and British Governments recognise how great is the sacrifice thus required of the Czechoslovak Government in the cause of peace. But because that cause is common both to Europe in general and in particular to Czechoslovakia herself, they have felt it their duty jointly to set forth frankly the conditions essential to secure it.

MR. CHAMBERLAIN AND HERR HITLER

MR. CHAMBERLAIN'S LETTER TO HERR HITLER, SEPTEMBER 23

I think it may clarify the situation and accelerate our conversation if I send you this note before we meet this morning.

I am ready to put to the Czechoslovak Government your proposal as to areas so that they may examine the suggested provisional boundary. So far as I can see, there is no need to hold a plebiscite for the bulk of areas, i.e., for those areas which (according to statistics upon which both sides seem agreeable) are predominantly Sudeten German areas. I have no doubt, however, that the Czech Government would be willing to accept your proposals for a plebiscite to determine how far, if at all, the proposed new frontier need be adjusted.

"Impossible"

The difficulty I see about the proposal you put to me yesterday afternoon arises from the suggestion that areas should, in the immediate future, be occupied by German troops. I recognise the difficulty of conducting a lengthy investigation under existing conditions and doubt whether the plan you propose would, if it were acceptable, provide an immediate easing of tension.

But I do not think you have realised the impossibility of my agreeing to put forward any plan unless I have reason to suppose that it will be considered by public opinion in my country, in France, indeed, in the world generally, as carrying out the principles agreed upon in an orderly fashion and free from the threat of force. I am sure that an attempt to occupy forthwith, by German troops, areas which will become part of the Reich at once in principle and very

shortly afterwards by delimitation would be condemned as an unnecessary display of force.

Even if I felt it right to put this proposal to the Czechoslovak Government, I am convinced that they would not regard it as being in the spirit of the arrangement which we and the French Government urged them to accept and which they have accepted.

In the event of German troops moving into areas as you propose there is no doubt that the Czechoslovak Government would have no option but to order their forces to resist and this would mean destruction of the basis upon which you and I, a week ago, agreed together, namely, an orderly settlement of this question rather than a settlement by use of force.

An Alternative Suggested

It being agreed in principle that Sudeten German areas are to join the Reich, the immediate question before us is how to maintain law and order pending final settlement of arrangements for transfer. There must surely be alternatives to your proposal which would not be open to the objections I have pointed out. For instance, I could ask the Czechoslovak Government whether they think there could be an arrangement under which maintenance of law and order in certain agreed Sudeten German areas would be entrusted to Sudeten Germans themselves by the creation of a suitable force or by the use of forces already in existence, possibly acting under the supervision of neutral observers.

As you know I reported last night, in accordance with my understanding with you, urging the Czechoslovak Government to do all in their power to maintain order in the meantime.

The Czech Government cannot, of course, withdraw their forces nor can they be expected to withdraw State Police as long as they are faced with the prospect of forcible invasion. But I should be ready at once to ascertain their views on the alternative plan I have made and, if the plan proved acceptable, I would urge them to withdraw their forces and State Police from areas where Sudeten Germans are in a position to maintain order, and the further steps that need to be taken to complete transfer could be worked out quite rapidly.

HERR HITLER'S REPLY, DATED SEPTEMBER 23, TO MR. CHAMBERLAIN

YOUR EXCELLENCY,

A thorough examination of your letter which reached me to-day as well as the necessity of clearing up the situation definitely, lead me to make the following communication.

For nearly two decades the German as well as various other nationalities in Czechoslovakia have been maltreated in the most unworthy manner, brutalised, economically destroyed and, above all, prevented from realising for them-

selves also the right of a nation to self-determination.

All attempts of the oppressed to change their lot failed in the face of the brutal will to destruction of Czechs. The latter were in possession of the power of state and did not hesitate to employ it ruthlessly and barbarically.

England and France have never made an endeavour to alter this situation.

" Victims Of Madness "

In my speech before the Reichstag of February 22, I declared that the German Reich would take the initiative in putting an end to any further oppression of these Germans. I have in a recent declaration, during the Reich Party Congress, given clear and unmistakable expression to this decision. I recognise, gratefully, that at last after 20 years the British Government represented by Your Excellency have now decided for its part also to undertake steps to put an end to a situation which, from day to day and indeed from hour to hour, is becoming more unbearable. For if formerly the behaviour of the Czechoslovak Government was brutal, it can only be described during recent weeks and days as madness.

The victims of this madness are innumerable Germans. In a few weeks the number of refugees who have been driven out has risen to over a hundred and twenty thousand. This situation, as stated above, is unbearable and will now be terminated by me.

Back To President Wilson

Your Excellency assures me now that the transfers of Sudeten territory to the Reich has, in principle, already been accepted. I regret to have to reply to Your Excellency, as regards this point, that the theoretical recognition of principles has also been formerly granted to us Germans.

In the year 1918, the Armistice was concluded on the basis of the points of President Wilson which, in principle, were recognised by all. They were, however, in practice broken in the most shameful way. What interests me, Your Excellency, is not the recognition of the principle that this territory is to go to Germany, but solely the realization of this principle and a realisation which puts an end in the shortest time to the sufferings of the unhappy victims of Czechoslovakia's tyranny, and, at the same time, in a manner befitting the dignity of a Great Power.

I can only emphasize to Your Excellency that these Sudeten Germans are not going back to the German Reich in virtue of the gracious or benevolent sympathy of other nations, but on grounds of their own will based on the right of self-determination of nations, and of the irrevocable decision of the German Reich to give effect to this will. It is, however, for a nation an unworthy demand to have such a recognition made dependent on conditions which are not provided for in treaties nor are practicable in view of the shortness of time.

I have, with the best intention and in order to give the Czech nation no justifiable cause for complaint, proposed—in the event of a peaceful solution—as the future frontier that nationality frontier which I am convinced represents a fair adjustment between two racial groups, taking also into account the continued existence of a large language island.

I am ready to allow plebiscites to be taken in the whole territory which will enable subsequent corrections to be made in order—so far as it is possible—to meet the real will of the people concerned. I have decided to accept these corrections in advance. I have, moreover, declared myself ready to allow this plebiscite to take place under the control either of International Commissions or of a mixed German-Czech Commission. I am ready during the days of the plebiscite to withdraw our troops from most of the disputed frontier areas subject to the condition that the Czechs do the same.

I am, however, not prepared to allow a territory, which must be considered as belonging to Germans on the ground of the will of the people and of recognition granted even by Czechs, to be left without the protection of the Reich. There is here no international power or agreement which would have the right to take precedence over the German right.

The idea of being able to entrust to Sudeten Germans alone the maintenance of order is practically impossible in consequence of the obstacles put in the way of political organization in the course of the last decade and particularly in recent times. As much as in the interests of the tortured, because defenceless, population as well as with regard to the duties and the prestige of the Reich, it is impossible for us to refrain from giving immediate protection to this territory.

“ Primitive Rights ”

Your Excellency assures me that it is now impossible for you to propose such a plan to your own Government. May I assure you, for my part, that it is impossible for me to justify any other attitude to the German people, since for England it is a question, at the most, politically imponderable, whereas for Germany it is a question of primitive rights and securities for more than 3,000,000 human beings and of the national honour of a great people.

I fail to understand the observation of Your Excellency that it would not be possible for the Czechoslovak Government to withdraw their forces so long as they were obliged to reckon with possible invasion since precisely by means of this solution the grounds for any force of action are to be removed.

Moreover, I cannot conceal from Your Excellency that the great belief with which I am inspired leads me to believe that the acceptance of the principles of transfer of the Sudeten Germans to the Reich by the Czech Government is only given in the hope of, by one means or another, bringing about a change in contradiction to this principle. For if the proposal that these territories are to belong to Germany is sincerely accepted, there is no ground to post-

pone practical resolution of this principle. My knowledge of Czech practice in such matters, over a period of long years, compels me to assume insincerity of Czech assurance so long as they are not implemented by practical proof. The German Reich is, however, determined, by one means or other, to terminate these attempts which have lasted for a decade to deny, by dilatory methods, the legal claims of the oppressed people.

Moreover, the same attitude applies to other nationalities in this State. They also are victims of long oppression and violence. In their case also, every assurance given hitherto has been broken. In their case also, attempts have been made, by dilatory dealing with their complaints or wishes, to win time in order to be able to oppress them still more subsequently.

These nationals also, if they are to achieve their rights, will sooner or later have no alternative but to secure them for themselves. If Germany, as it now appears to be the case, should find it impossible to have the clear rights of Germans in Czechoslovakia acceded to by way of negotiation, she is determined to exhaust other possibilities which remain open to her.

MR. CHAMBERLAIN'S SECOND LETTER, SEPTEMBER 23

MR. CHAMBERLAIN RETURNS TO ENGLAND

I have received Your Excellency's communication in reply to my letter of this morning, and have taken note of its contents.

In my capacity as intermediary, it is evidently now my duty—since Your Excellency maintains entirely the position you took last night—to put your proposal before the Czechoslovak Government. Accordingly, I request Your Excellency to be good enough to let me have a memorandum which sets out these proposals, together with a map showing the areas proposed to be transferred subject to the result of the proposed plebiscite.

On receiving this memorandum, I will at once forward it to Prague and request a reply of the Czechoslovak Government at the earliest possible moment. In the meantime, until I can receive their reply, I should be glad to have Your Excellency's assurance that you will continue to abide by the understanding, which we reached at our meeting on September 14 and again last night, that no action should be taken, particularly in Sudeten territory, by forces of the Reich, to prejudice any further mediation which may be found possible.

Since acceptance or refusal of Your Excellency's proposal is now a matter for the Czechoslovak Government to decide, I do not see that I can perform any further service here; while, on the other hand, it has become necessary that I should at once report the present situation to my colleagues and to the French Government. I propose, therefore, to return to England.

HERR HITLER'S DEMANDS

MEMORANDUM OF SEPTEMBER 23

Reports are increasing in number, from hour to hour, regarding incidents in Sudeten land showing that the situation has become completely intolerable for the Sudeten German people and, in consequence, a danger to the peace of Europe. It is, therefore, essential that the separation of Sudeten land agreed to by Czechoslovakia should be effected without any further delay.

In the attached map the Sudeten German area which is to be ceded is shaded red. The areas in which, over and above the areas which are to be occupied, a plebiscite is also to be held, are drawn in and shaded green.

The final delimitation of the frontier must correspond to the wishes of those concerned. In order to determine these wishes, a certain period is necessary for the preparation of the plebiscite during which disturbances must, in all the circumstances, be prevented. A situation of parity must be created.

The area designated on the attached map as German is to be occupied by German troops without taking account as to whether in the plebiscite there may prove to be, in this or that part of the area, a Czech majority. On the other hand, Czech territory is to be occupied by Czech troops without taking account as to whether within this area there lies a large German language island in which, in plebiscite, a majority will without doubt give expression to its German National feeling.

With a view to bringing about an immediate and final solution of the Sudeten German problem, the following proposals are submitted by the German Government :

(1) Withdrawal of the whole of the Czech armed forces, the police, the Gendarmerie, the Customs officials, and Frontier Guard from the area to be evacuated, as designated on the attached map of this area, to be handed to Germany on October 1.

(2) The evacuated territory is to be handed over in its present condition (see further details in the appendix). The German Government agree that a plenipotentiary representative of the Czechoslovak Government and of the Czech Army should be attached to the headquarters of German military forces to deal with the details of modalities.

(3) The Czechoslovak Government discharge at once all Sudeten Germans serving anywhere in the Czech State territory and permit them to return here.

(4) The Czechoslovak Government liberate all political prisoners of the German race.

(5) The German Government agree to permit a plebiscite to take place in those areas which will more definitely be defined before at the latest November 25. Alteration in the new frontiers arising out of the plebiscite will be settled by a German-Czech or an International Commission.

(6) The plebiscite itself will be carried out under the control of an International Commission.

Terms Of Plebiscite

(7) All persons who were residing in the areas in question on October 28, 1918, or who were born in those areas prior to this date will be eligible for voting. A simple majority of all eligible male and female voters will determine the desire of the population to belong either to the German Reich or to the Czech State. During the plebiscite both parties will withdraw their

military forces out of areas which will be defined more precisely. The date and duration will be settled mutually by the German and Czech Governments.

(8) The German Government proposes that an authoritative German-Czech Commission shall be set up to settle all further details.

Appendix.—The evacuated Sudeten German area is to be handed over without destroying or rendering unuseable in any way military, economic and traffic material; especially rolling stock of railway systems in designated areas is to be handed over undamaged. The same applies to all utility services (gas works, power stations, etc.). Finally, no food stuffs, goods, cattle, raw materials, etc., are to be removed.

CZECH MINISTER'S LETTER, DATED SEPTEMBER 25, REPLY- ING TO HERR HITLER'S MEMORANDUM

My Government has instructed me just now in view of the fact that the French statesmen are not arriving in London to-day to bring to His Majesty's Government's notice the following message without delay. The Czechoslovak people have shown a unique discipline and self-restraint in the last few weeks regardless of the unbelievably coarse and vulgar campaign of the controlled German press and radio against Czechoslovakia and its leaders, especially Mr. Benes. His Majesty's and the French Governments are very well aware that we agreed under the most severe pressure to the so called Anglo-French plan for ceding parts of Czechoslovakia. We accepted this plan under extreme duress. We had not even time to make any representations about its many unworkable features.

Nevertheless we accepted it because we understood that it was the end of the demands to be made upon us and because it followed from the Anglo-French pressure that these two Powers would accept responsibility for our reduced frontier, and would guarantee us their support in the event of our being feloniously attacked. The vulgar German campaign continued.

While Mr. Chamberlain was at Godesberg, the following message was received by my Government from His Majesty's and the French Representatives at Prague : "We have agreed with the French Government that the Czechoslovak Government be informed that the French and British Governments cannot continue to take the responsibility of advising them not to mobilise".

My new Government headed by General Syrový declared that they accept full responsibility for their predecessors' decision to accept the stern terms of the so called Anglo-French plan.

Yesterday, after the return of Mr. Chamberlain from Godesberg, a new proposition was handed by His Majesty's Minister in Prague to my Government with the additional information that His Majesty's Government is acting solely as an intermediary and is neither advising nor pressing my Government in any way. Mr. Krofta in receiving the plan from the hands of His Majesty's Minister in Prague

assured him that the Czechoslovak Government will study it in the same spirit in which they have cooperated with Great Britain and France hitherto.

My Government has now studied the document and the map. It is a *de facto* ultimatum of the sort usually presented to a vanquished nation and not a proposition to a sovereign State which has shown the greatest possible readiness to make sacrifices for the appeasement of Europe. Not the smallest trace of such readiness for sacrifices has as yet been manifested by Mr. Hitler's Government.

" Amazed "

My Government is amazed at the contents of the memorandum. The proposals go far beyond what we agreed to in the so called Anglo-French plan. They deprive us of every safeguard for our national existence. We are to yield up large proportions of our carefully prepared defences and admit the German armies deep into our country before we have been able to organise it on the new basis or make any preparations for its defence. Our national and economic independence would automatically disappear with the acceptance of Herr Hitler's plan.

The whole process of moving the population is to be reduced to panic flight on the part of those who will not accept the German Nazi regime. They have to leave their homes without even the right to take their personal belongings or even in the case of peasants their cow. My Government wish me to declare in all solemnity that Herr Hitler's demands in their present form are absolutely and unconditionally unacceptable. Against these new and cruel demands my Government feel bound to make their utmost resistance and we shall do so, God helping.

The nation of St. Wenceslas, John Hus, and Thomas Masaryk will not be a nation of slaves. We rely upon the two great Western Democracies, whose wishes we have followed much against our own judgment, to stand by us in our hour of trial.

CZECH MINISTER'S LETTER, DATED SEPTEMBER 26

I have communicated to my Government the Prime Minister's question which he put to me yesterday afternoon, and for which he wished an answer. This question of the Prime Minister, as I understood it, is transmitted to Prague as follows :

" Although Herr Hitler did say that the memorandum handed to the Czechoslovak Government by His Majesty's Government was his last word, and although Mr. Chamberlain doubts very much that he could induce Herr Hitler to change his mind at this late hour, the Prime Minister may under the circumstances make a last effort to persuade Herr Hitler to consider another method of settling peacefully the Sudeten German Question, namely, by means of an International Conference attended by Germany, Czechoslovakia and other Powers which would consider the Anglo-French plan and the

best method of bringing it into operation. He asked whether the Czechoslovak Government would be prepared to take part in this new effort of saving the peace."

Czechs Accept Conference

To this question I have now received the following answer of my Government :

" The Czechoslovak Government would be ready to take part in an International Conference where Germany and Czechoslovakia, among other nations, would be represented to find a different method of settling the Sudeten German question from that expounded in Herr Hitler's proposals, keeping in mind the possible reverting to the so called Anglo-French plan. In the note which Mr. Masaryk delivered to Mr. Chamberlain yesterday afternoon mention was made of the fact that Czechoslovak Government, having accepted the Anglo-French note under the most severe pressure and extreme duress, had no time to make any representations about its many unworkable features. The Czechoslovak Government presumes that, if a conference were to take place, this fact would not be overlooked by those taking part in it."

My Government after the experiences of the last few weeks would consider it more than fully justifiable to ask for definite and binding guarantees to the effect that no unexpected action of an aggressive nature would take place during the negotiations and that the Czechoslovakia defence system would remain intact during that period.

MR. CHAMBERLAIN TO HERR HITLER, DATED SEPTEMBER 26

My dear Reichskanzler,

In my capacity as intermediary I have transmitted to the Czechoslovak Government the memorandum which Your Excellency gave me on the occasion of our last conversation.

The Czechoslovak Government now inform me that while they adhere to their acceptance of proposals for transfer of Sudetan German areas on the lines discussed by my Government and the French Government and explained by me to you on Thursday last, they regard as wholly unacceptable the proposal in your memorandum for immediate evacuation of areas and their immediate occupation by German troops, these processes to take place before terms of cession have been negotiated or even discussed.

Your Excellency will remember that in my letter to you of Friday last I said an attempt to occupy forthwith by German troops areas which will become part of Reich, at once in principle, and very shortly afterwards by formal delimitation, would be condemned as an unnecessary display of force and that in my opinion if German troops moved into the areas that you had proposed, I felt sure that the Czechoslovak Government would resist and that this would mean destruction of the basis upon which you and I a week ago agreed to work together, namely, an orderly settlement of this question rather

than a settlement by use of force. I referred also to the effect likely to be produced upon public opinion in my country, in France and indeed in the world generally.

The development of opinion since my return confirms me in the views I expressed to you in my letter and in our subsequent conversation. In communicating with me about your proposals, the Government of Czechoslovakia point out that they go far beyond what was agreed in the so-called Anglo-French plan.

Czechoslovakia would be deprived of every safeguard for her national existence. She would have to yield up large proportions of her carefully prepared defences and admit German armies deep into her country before it had been organised on a new basis or any preparations had been made for its defence. Her national and economic independence would automatically disappear with the acceptance of the German plan. The whole process of moving the population is to be reduced to panic flight.

I learn that the German Ambassador in Paris has issued a communiqué which begins by stating that as a result of our conversations at Godesberg Your Excellency and I are in complete agreement as to imperative necessity to maintain peace of Europe. In this spirit I address my present communication to you.

In the first place, I would remind Your Excellency that as the Czechoslovak Government adhere to their acceptance of proposals for transfer of Sudeten-German areas, there can be no question of Germany "finding it impossible to have the clear rights of Germans in Czechoslovakia acceded to by way of negotiation". I am quoting words at the end of Your Excellency's letter to me of Friday last.

On the contrary, a settlement by negotiation remains possible and with a clear recollection of the conversations which you and I have had and with an equally clear appreciation of the consequences which must follow abandonment of negotiation and the substitution of force, I ask Your Excellency to agree that representatives of Germany shall meet representatives of the Czechoslovak Government to discuss immediately the situation with which we are confronted, with a view to settling by agreement the way in which the territory is to be handed over. I am convinced that these discussions can be completed in a very short time and, if you and the Czechoslovak Government desire it, I am willing to arrange for the representation of the British Government at the discussions.

In our conversations, as in the official Communiqué issued in Germany, you said that the only difference between us lay in method of carrying out an agreed principle. If this is so then surely the tragic consequences of a conflict ought not to be incurred over a difference in method.

A Conference such as I suggest would give the confidence that the cession of territory would be carried into effect but that it would be done in an orderly manner with suitable safeguards.

Convinced of your passionate wish to see the Sudetan German question promptly and satisfactorily settled, which can be fulfilled without incurring the human misery and suffering that would inevitably follow on a conflict, I most earnestly urge you to accept my proposal.

**HERR HITLER TO
MR. CHAMBERLAIN,
DATED SEPTEMBER 27**

Dear Mr. Chamberlain,

I have in the course of the conversations once more informed Sir Horace Wilson, who brought me your letter of September 26, of my final attitude.

I should like, however, to make the following written reply to certain details in your letter.

The Government in Prague feels justified in maintaining that the proposals in my memorandum of September 23 went far beyond the concession which it made to the British and French Governments and that the acceptance of the memorandum would rob Czechoslovakia of every guarantee for its national existence. This statement is based on the argument that Czechoslovakia is to give up a great part of her prepared defensive system before she can take steps elsewhere for her military protection. Thereby the political and economic independence of the country is automatically abolished. Moreover the exchange of population proposed by me would turn out in practice to be a panicstricken flight.

I must openly declare that I cannot bring myself to understand these arguments or even admit that they can be regarded as seriously put forward.

A Free Vote

The Government in Prague simply passes over the fact that the actual arrangement for the final settlement of the Sudetan German problem in accordance with my proposals will be made dependent not on a unilateral German decision or on German measures of force, but rather on the one hand on a free vote under no outside influence, and, on the other hand, to a very wide degree on German-Czech agreement on matters of detail, to be reached subsequently.

Not only the exact definition of the territories in which the plebiscite is to take place but the execution of the plebiscite and the delimitation of the frontier to be made on the basis of its result are, in accordance with my proposals, to be met independently of any unilateral decision by Germany. Moreover all other details are to be reserved for agreement on the part of a German-Czech Commission.

In the light of this interpretation of my proposals, and in the light of the cession of the Sudeten population areas in fact agreed to by Czechoslovakia, the immediate occupation by German contingents demanded by me

represents no more than a security measure which is intended to guarantee a quick and smooth achievement of the final settlement. This security measure is indispensable. If the German Government renounced it and left the whole further treatment of the problem simply to normal negotiations with Czechoslovakia, the present unbearable circumstances in the Sudeten German territories, which I described in my speech yesterday, would continue to exist for a period the length of which cannot be foreseen. The Czechoslovak Government would be completely in a position to drag out the negotiations on any point they liked and thus to delay the final settlement.

No Confidence In Prague

You will understand after everything that has passed that I cannot place such confidence in the assurances received from the Prague Government. The British Government also would surely not be in a position to dispose of this danger by any use of diplomatic pressure.

That Czechoslovakia should lose a part of her fortifications is naturally an unavoidable consequence on the cession of the Sudeten German territory agreed to by the Prague Government itself. If one were to wait for the entry into force of the final settlement in which Czechoslovakia had completed new fortifications in the territory which remained to her it would doubtless last months and years.

But this is the only object of all the Czech objections.

Above all it is completely incorrect to maintain that Czechoslovakia in this manner would be crippled in her national existence or in her political and economic independence. It is clear from my memorandum that the German occupation would only extend to the given line and that the final delimitation of the frontier would take place in accordance with the procedure which I have already described. The Prague Government has no right to doubt that the German military measures would stop within these limits. If, nevertheless, it desires such a doubt to be taken into account, the British and, if necessary, also the French Government can guarantee the quick fulfilment of my proposal.

I can moreover only refer to my speech yesterday in which I clearly declared that I regret the idea of any attack on Czechoslovak territory and that under the condition which I laid down I am even ready to give a formal guarantee for the remainder of Czechoslovakia. There can, therefore, be not the slightest question whatsoever of a check to the independence of Czechoslovakia.

It is equally erroneous to talk of an economic rift. It is on the contrary a well known fact that Czechoslovakia after the cession of the Sudeten territory would constitute a healthier and more unified economic organism than before.

If the Government in Prague finally evinces anxiety also in regard to the state of the

Czech population in the territories to be occupied I can only regard this with surprise. It can be sure that on the German side nothing whatever will occur which will reserve for those Czechs a similar fate to that which has befallen the Sudeten Germans consequent on the Czech measures.

A Ruse ?

In these circumstances I must assume that the Government in Prague is only using a proposal for the occupation by German troops in order, by distorting the meaning and object of my proposal, to mobilise those forces in other countries in particular in England and France from which they hope to receive unreserved support for their aim and thus to achieve the possibility of a general warlike conflagration.

I must leave it to your judgment whether in view of these facts you consider that you should continue your effort, for which I should like to take this opportunity of once more sincerely thanking you, to spoil such manoeuvres and bring the Government in Prague to reason at the very last hour.

The Cattle Drain in India

(Continued From Page 135.)

not stand work in the hot sun. It is also much slower than the ox. As for the female buffalo, it yields only a medium amount of milk : it is an exceptional animal that goes beyond 5,000 pounds in three hundred days. But, of course, since the buffalo is much larger and heavier than the cow, its maintenance ration is proportionately greater. Moreover, it is often an irregular breeder with long dry periods, and is much more nervous and temperamental than the cow. Yet the buffalo has a place in India, and should receive careful study with a view to improvement.

With regard to further improvement of cattle in India to my way of thinking two policies might well be carried out simultaneously : the improvement of the existing Indian breeds through proper selection and care and proper feeding on a much larger scale than at present, and the adoption of a cross-breeding program of mating both foreign bulls and a limited number of foreign cows with Indian cattle. If the latter experiment were kept in the hands of skillful breeders, a few years would show whether a new breed made up of the imported and the Indian breed could be established in India, which would have practically all the advantages of the Indian animal, *plus* the great advantage of early maturity in the cow and enough milk to make a profit under Indian conditions. The resulting gain for India, in physical health and economic well-being, would indeed be great.

LOYAL MESSAGES FROM THE PRINCES

Thirty-two loyal telegrams placing their services and those of their States at the disposal of the King Emperor in the event of a European war, had, by September 26, been received from Princes by His Excellency, the Viceroy. To all His Excellency sent warm thanks in reply.

The messages are given below in the order in which they were received.

STOP PRESS :—By September 30, fiftyfour loyal messages had been received.

The Maharaja Of Bikaner

I have been closely following with deep concern the war clouds that have been gathering in Europe and the recent developments leading to the present critical international situation and in the event—God forbid—of war in which Great Britain may be compelled to enter, I take this earliest opportunity of placing unreservedly at His Imperial Majesty's command my own sword and the services of my troops and the entire resources of the Bikaner State.

It has been the proud privilege of my House and of my State never to have wavered in rendering the utmost possible loyal service to the British Crown at all times, in war and in peace, and I and my subjects are ever prepared to shed the last drop of our blood for His Imperial Majesty, and my army though small in number is ready to proceed wherever required at a moment's notice and eagerly solicits the honour of once again fighting for His Imperial Majesty should war unhappily break out.

Although not as young as in 1914 or in as good health and although various important matters including the agricultural situation due to insufficient rainfall, may not render it possible for me to stay away from my State for an indefinite period, I would earnestly beg that I too may not be left inactive in India and that I may once again be afforded an opportunity to fight for my beloved Emperor.

The proven loyalty of the Princes and people of the Indian States has no price nor is it a matter for bargain or barter and gravely anxious as the present times are in certain direction for the Indian States I can conceive of no greater mistake being made by anyone in India, Europe or elsewhere than to imagine that the Princes of India will not again rally round their gracious Emperor on this occasion or that such matters of domestic concern as differences big or small which the Indian States may have had or still have with the Government of India could deter the States in such times of grave emergency from rendering every assistance within their power in the defence of the Empire towards which they are inspired by the most faithful friendship.

The Nawab Of Tonk

In the event of the Empire being involved in war I wish to place my own services, those of my family, my State forces, and all resources, of my State at the entire disposal of our beloved Sovereign.

The Maharaja Of Gwalior

The British Power has always been the champion of peace in Europe as it has been the custodian of peace in this country. The efforts made by His Majesty's Government in this direction in the last few weeks and the magnanimous gesture of conciliation shown by His Majesty's Prime Minister this week has convinced the world that they have done all that is humanly possible to maintain peace and avoid war. The atmosphere is still tense.

In this moment of crisis, as the son of Maharaja Madhavrao Scindia who had placed his person, his army and his resources in the Great War of 1914 at the service of the King, and the grandson of Maharaja Jayajirao Scindia who had staked his all for the British cause in the dark hour of the Mutiny of 1857, I can do no better than place my personal services, the services of my army, my nobles and my subjects, along with the entire resources of the State at the disposal of His Majesty the King Emperor to be utilised by him whenever the cause of peace is in danger in the manner His Majesty may deem fit.

The Maharaja Of Jodhpur

In view of the grave international situation, I feel it my duty to request Your Excellency kindly to communicate to His Majesty the King Emperor an expression of my unflinching loyalty to His Person and Throne in this crisis. I beg further to offer my personal services unreservedly and to place all the resources of my State both civil and military at the disposal of the Imperial Government in the event of war breaking out.

The Maharawal Of Dungarpur

In view of the grave international crisis, which I pray may yet be averted, I take this early opportunity in the event of Great Britain being involved in war to respectfully and wholeheartedly place at the command of our Gracious King Emperor my own services and the entire resources of my State.

The Maharao Of Kotah

I feel much concerned at the grave international situation and request Your Excellency to convey my message of unflinching loyalty to His Majesty the King Emperor and my desire to place my personal services with all the resources of my State at His Majesty's disposal in case Great Britain gets involved in War.

The Maharawat Of Partabgarh

Looking at the present grave international situation, I am impelled by a sense of devotion and attachment to His Majesty the King Emperor to place myself and all resources of my State for services in event of Great Britain—God forbid—being involved in war.

The Maharana Of Danta

In view of the grave international situation, I offer my personal services and entire resources of my State at the command of our beloved King Emperor in the event of Great Britain being involved in war.

The Nawab Of Palanpur

May I request Your Excellency to convey my sincerest and deep felicitations to Mr. Neville Chamberlain, the great Prime Minister, for infusing enough oxygen into the stuffy air of this world and thus making every human being to breathe a little again. I pray that peace by the great efforts of Britain will still be maintained and the present civilisation will be saved to do further good to humanity. God forbid the disaster, but if the evil process will start to destroy this civilisation and bring sufferings to humanity which the world has so far never seen, I need hardly assure Your Excellency that as in the past, so always in the future, myself, my family and all my resources are at the disposal of His Imperial Majesty.

The traditional loyalty of the Palanpur Reigning House of which we are so proud will ever be maintained in serving the Crown. Grateful Your Excellency conveying my deep messages of loyalty to His Imperial Majesty. Deepest remembrances and respectful regards.

The Maharaja Of Patiala

While I pray with all devoutness that the unprecedented tragedy that threatens to overwhelm the civilized world may be averted and the courageous and statesmanlike intervention of the British Premier may serve to ease the grave international situation, still, should the forces of darkness and aggressive militarism get the better of sane counsel and Great Britain find herself involved in a war, I hasten to place at His Imperial Majesty's commands my personal services, the services of my army and the entire resources of my State.

As a devoted ally of His Majesty and the Ruler of the Premier Sikh State in India, which has always been the nursery of soldiers, and as an heir to the proud, martial traditions of the House of Patiala, whose soldier rulers have always unreservedly placed themselves at the disposal of His Imperial Majesty, and have given ample proof of their loyal and gallant spirit in battle and in times of stress and danger, I shall most cheerfully respond to any call from His Majesty to ensure peace and tranquillity of the world.

That my House has not only avowed this truth but has always given practical proof of it is amply proved by the history of the dark days of the Mutiny, the Frontier Wars and above all the Great War when my men bore

the brunt boldly in Gallipoli, Egypt and Mesopotamia, etc., and were amongst the first to take the field against the enemy which they never left till the victory was secured for our Imperial Majesty. Please assure His Majesty that I, my people and my army are ready for any services in the defence of the Empire.

The Maharao Of Sirohi

Hasten to offer the services and full resources of my State if England involved in war.

The Raja Of Faridkot

I request Your Excellency to convey my loyal message to His Imperial Majesty King Emperor that all the resources of my State are unreservedly at his command, and that my services, and those of my troops, are at his disposal should an opportunity arise for Great Britain to enter in any war in view of the present critical international situation in Europe.

Faridkot has always been noted for its unswerving loyalty to the British Empire and unflinching devotion to the person and throne of His Majesty, and I take this opportunity to reiterate the assurance that Faridkot will yield to none in its loyal services to the Empire.

I have every hope that should an occasion arise I will be allowed the proud privilege of personal services in the front as was allowed to me in the Waziristan disturbance.

The Maharaja Of Benares

In view of the critical political situation in Europe and the possibility of a war breaking out in which Great Britain may be involved, I beg to offer to place the services of my State forces and the entire resources of the State, humble though they are, at the disposal of His Imperial Majesty, should such a war unhappily break out.

The Maharaja of Malerkotla

In view of the serious international situation in Europe and in the event of war, which God forbid, in which Great Britain may be compelled to enter, the services of my troops, all the resources of my State and my personal services will be unreservedly at the command of His Imperial Majesty our beloved King Emperor.

The traditional loyalty of my house and my State is well known, and I reassure Your Excellency of the unswerving loyalty of my house, my State and myself to the person and throne of His Imperial Majesty.

My troops have had the proud privilege of serving the King Emperor in the Great War and on many such occasions before that and they are ready to proceed and serve His Imperial Majesty wherever and whenever required.

I pray that the war clouds which have been gathering over Europe may disappear by the peace efforts which are being made by Great Britain.

The Maharaja Of Kishangarh

In the event of Great Britain becoming involved in war, the entire resources of the Kishangarh State are at His Majesty's command loyally as ever before.

The Nawab Of Rampur

In keeping with the traditions of my house, and following the example of my forefathers, set at critical junctures like the Indian Mutiny and the Great War, I shall be proud to offer my personal services as a soldier, and those of my troops and the entire resources of my State, unreservedly in the service of the King Emperor whenever required.

The Maharaja Of Rewa

Should His Majesty's Government be forced to a war, in view of the threatening situation in Europe, I offer myself and my resources at the disposal of His Majesty for any commands deemed proper. Request this may kindly be communicated to proper quarters.

The Maharaja Of Alwar

I request Your Excellency kindly to convey to His Imperial Majesty, at this critical juncture, the unswerving loyalty and devotion of my State, family and myself, to the Person and Throne of our beloved King Emperor. I further request Your Excellency to convey to His Imperial Majesty my offer to place unreservedly in event of Great Britain being involved in war, all the resources of my State at His Majesty's command, as well as my own personal services and services of my army. In making this offer of humble service I not only continue traditions of Alwar State but regard the opportunity of serving His Imperial Majesty as my proud privilege.

The Maharaja Of Udaipur

Please communicate to His Excellency the Crown Representative that in view of the grave international situation in the event of Great Britain being involved in war, I offer the services of my military forces and place the resources of my State at the command of His Imperial Majesty, the King Emperor.

The Maharaja Of Sirmur : Nahan.

I shall be highly grateful if Your Excellency is pleased to accept my loyal personal services and entire resources and the services of my troops for our beloved King Emperor in case of any emergency or war.

The Maharaja of Travancore

I wish to assure His Majesty the King Emperor, through Your Excellency, that all the resources of my State will be gladly placed at the disposal of His Majesty in the event of war.

The Maharawal Of Jaisalmer

I view with deep concern the alarming and tense international situation. In the event

that Great Britain is forced to war, in spite of the best efforts to maintain world peace, I request Your Excellency to convey an expression of my steadfast loyalty and devotion to the Person and Throne of His Majesty King Emperor, assuring that my personal services with all the resources of my State will be placed unreservedly at the command of His Majesty.

The Raja Of Baraundha

Please convey my earnest and loyal desire of placing my person and all resources of my State at the disposal of His Majesty the King Emperor in the event of war.

The Raja Of Lunawada

I have been very closely and anxiously following the developments in international situation in Europe. The present critical stage naturally causes deep concern. Should the situation develop into an inevitable war in which the British Empire may be forced to enter, I take this opportunity of placing myself and the resources of my State unreservedly at the disposal of His Majesty the King Emperor.

In the last Great European War, it was the proud privilege of my House to place the resources of the State at the disposal of His Majesty's Government. I will also deem it a great privilege if an opportunity be afforded to me to fight personally for our beloved Emperor.

The Maharaja of Jaipur

I have watched with anxious concern the existing tense situation in Europe, caused by the gravity of international affairs. It is my earnest hope that the efforts of pacification and appeasement of the European tangle may be eventually successful and a world conflagration may be avoided, but in case it becomes necessary for Great Britain to be involved in the next War, I hasten to offer unreservedly my personal services as well as those of my Army, and the entire resources of my State, at the disposal of His Majesty the King Emperor, in whatever sphere they may be required. At a given time, my Armies would be prepared to answer the call which will be in consonance with the traditional loyalty and allegiance of my House and the State to the Imperial Crown. I would, therefore, request Your Excellency to be good enough to convey my offer to His Majesty the King Emperor and to assure him of the implicit loyalty and unswerving support of my Government and my people in the cause of the British Empire.

It was my intention to address Your Excellency on the subject much earlier, but as I was coming to stay with Your Excellency in Simla shortly, I postponed it till I could have the opportunity of making this offer personally.

With my expressions of highest esteem and regard.

The Nawab of Jaora

From newspaper reports I gather that recent developments in Czechoslovakia and delay in their final satisfactory settlement create apprehension of a possible opening of international hostilities in Europe. Should such a contingency arise, I desire to assure Your Excellency that it will give me the greatest pleasure to place the entire resources of my State at the disposal of His Majesty in any action which His Majesty may choose to take. In conveying this assurance I also desire to reiterate the feelings of my continued and unswerving loyalty to the Person and Throne of His Imperial Majesty.

The Maharaja of Rajpipla

Resources of my State and my personal services are at the disposal of His Majesty the King Emperor. By the grace of God, the bold and straightforward policy taken by the Prime Minister will bring peace.

The Maharaja of Jammu and Kashmir

In the event of the great efforts which His Majesty's Government are making for a peaceful settlement of the European crisis proving a failure and the possibility of the outbreak of war involving Great Britain and the British Empire, I desire to place at the disposal of His Majesty the King Emperor my personal services and all the resources of my State, for such use as His Majesty may desire to make of this my loyal offer.

The Raja of Mandi

While I confidently hope and earnestly pray that the supreme effort made by His Majesty's Government for the peaceful settlement of the situation in Europe will be crowned with success and the danger to the peace and progress of humanity will be fully averted, I wish to assure Your Excellency, and through you His Majesty the King Emperor, that in the tragic event of outbreak of war my personal services, my State forces, though small, and all the resources of my State are at His Majesty's disposal.

The Raja of Sitamau

Considering tense European situation I deem it my duty to announce that in the event of war I and my State shall as ever stand loyally by the Crown and whatever little resources my State has will be placed at His Majesty's disposal.

The Maharaja of Tripura

The sudden turn in international situation during last few days inspite of utmost efforts on part of Prime Minister has filled our minds with grave concern. I feel proud to place my personal services and entire resources of my State at disposal of our beloved King Emperor. I am sure whole of princely order stands solidly behind our gracious sovereign in present crisis.

KING EMPEROR'S ANTI-TUBERCULOSIS FUND

NINETEENTH SUBSCRIPTION LIST

Grand Total Now Rs. 57,36,422

The nineteenth list of subscriptions actually received upto September 15, 1938, in response to Her Excellency the Marchioness of Linlithgow's Appeal for the King Emperor's Anti-Tuberculosis Fund, amounts to Rs. 2,24,983-1-6 which brings the grand total of cash in hand to Rs. 57,36,422-11-4.

Total amount previously acknowledged, Rs. 54,49,846-10-7.

Assam.—Through Provincial Organisation, Rs. 6,000-0-0.

Bengal.—Through Provincial Organisation, Rs. 11,937-12-3.

Bombay.—K. E. Anti-Tuberculosis Fund, Taluka Hangal, District Dharwar, Rs. 83-6-0 ; The Mamlatdar, Kalghatgi Taluka, District Dharwar, Rs. 95-4-0 ; The Mamlatdar, Bankapur, District Dharwar, Rs. 80-0-0 ; The Mamlatdar, Taluka Ranabennur, Rs. 1,170-1-0 ; Through Provincial Organisation, Rs. 10,000-0-0. Total :—Rs. 11,428-11-0.

Central Provinces & Berar.—Through Provincial Organisation, Rs. 15,000-0-0.

Delhi.—Mr. M. R. Coburn, O.B.E. (8th instalment), Rs. 5-0-0 ; Through Provincial Organisation, Rs. 500-0-0. Total :—Rs. 505-0-0.

N.-W. F. Province.—Through Provincial Organisation, Rs. 588-0-0.

Punjab.—Through Provincial Organisation, Rs. 15,000-0-0 ; Mrs. Coburn, Simla, Rs. 35-0-0. Total :—Rs. 15,035-0-0.

Sind.—Mr. M. L. Khanna, Sukkur, Rs. 1-11-0.

Baluchistan.—K. E. Anti-Tuberculosis Fund, Quetta, Rs. 595-0-0.

Centre.—The Deputy Commissioner, Central Excises and Salt, Eastern Charge, Calcutta, Rs. 70-12-0 ; Mr. Quilina Cardoso, Loutulim, Goa, Rs. 5-0-0 ; The Commissioner, Central Excises and Salt, Northern India, Delhi, Rs. 165-8-0 ; The Superintendent, Central Excises and Salt, Meerut, Rs. 40-0-0 ; Subscriptions realised by His Majesty's Vice-Consul at Khurramshahr, Rs. 220-9-0. Total :—Rs. 501-13-0.

States.—Mayurbhanj, Rs. 325-0-0 ; Patna, Rs. 5,000-0-0 ; Athgarh, Rs. 310-9-8 ; Chhota Udepur, Rs. 1,154-0-0 ; Baroda, Rs. 2,00,000-0-0 ; Balasinor, Rs. 753-12-0 ; Gwalior, Rs. 12,553-13-10 ; Jind, Rs. 327-15-3 ; Jhalawar, Rs. 2,000-0-0 ; Jaipur, Rs. 1,534-8-3 ; Shahpura, Rs. 272-15-6 ; Limbdi, Rs. 358-0-0 ; Nawanganagar, Rs. 392-7-0. Total :—Rs. 2,24,983-1-6.

Grand Total :—Rs. 57,36,422-11-4.

SOUTH INDIAN BANKING CRISIS

RESERVE AND SCHEDULED BANKS

Assembly Question :

August 22, 1938

“ Government are in continuous touch with the Reserve Bank through their official Director on the Central Board and are satisfied that the Bank's legal powers are adequate to enable it to assist banks, which are soundly run ”, said the Hon'ble SIR JAMES GRIGG, Finance Member, in the Central Legislative Assembly, in reply to questions on the South Indian Banking crisis.

The following are the main points of the statement :—

I should like to reiterate what I have said previously about the confidentiality of communications between the Reserve Bank and Government and to say that any departure which I make in this statement from this general rule is not to be regarded as a precedent.

The affairs of the bank in question are now before the Courts, and the Reserve Bank, with the permission of the Madras High Court, conducted a preliminary investigation into its affairs and has submitted its opinion to the Court. In the circumstances, it would be improper to inquire at this stage into the relationship between that bank and the Reserve Bank or to make other enquiries which are intimately connected with a matter which is *sub judice*.

The closure of that bank had temporary repercussions on other banks in south India, and the Deputy Governor of the Reserve Bank went to Madras to look into the situation. The actual run on the scheduled banks, however, was slight and was stopped by the issue of a communiqué by the Reserve Bank that it considered the general banking position sound, and that it saw no reason why other south Indian banks should be adversely affected by the closure of the Travancore National and Quilon Bank in circumstances which were peculiar to it.

Reserve Bank's Powers Adequate

Several requests for financial assistance were made by the scheduled banks, and the Reserve Bank met them to the extent which it judged sufficient, and which in fact proved sufficient, to meet the situation. Government have no reason to believe that the Reserve Bank authorities did not adequately discharge their obligations under the Reserve Bank Act. Government are in continuous touch with the Reserve Bank through their official director on the Central Board and are satisfied that the Bank's legal powers are adequate to enable it to assist banks which are soundly run ; and that, despite certain criticisms which appear to have been levelled against the Bank, on this occasion it used them adequately and on proper lines and in conformity with the Reserve Bank Act.

As regards individual transactions with scheduled banks, both on this occasion and previously, the relations between the Reserve Bank and the scheduled banks must be confidential, if the interests of the latter are to be

properly safeguarded, and Government, therefore, do not consider that it would be desirable to seek or give any further information as to the types of bills discounted or the advances made to scheduled banks beyond the totals which are published in the weekly returns of the Reserve Bank.

Close Touch

The Reserve Bank fully realizes that if it is to be in a position to render timely assistance to soundly run banks which may find themselves in temporary difficulties, it must keep in close touch with their affairs when they are running smoothly, and it has on several occasions indicated to them its desire to do so, but the ability of the Reserve Bank to keep in touch with them clearly depends largely on the scheduled banks themselves, as the Reserve Bank cannot compel them to disclose their affairs to it. It is, however, again addressing them in this matter.

As regards the various types of security which it may accept under the Act, there appears to be considerable misapprehension. The Reserve Bank did not refuse assistance in any instance on technical grounds, but it naturally reserved discretion to limit its assistance to what it considered necessary and under the most appropriate security.

This is the first occasion in the history of the Reserve Bank in which assistance has been required on account of a run, and though, so far, it considers its legal powers adequate (and, after all, the powers given to the Bank in the Act were based on a most careful examination of central banks in other countries), it is examining them in the light of their recent practical application and will invite the comments of the scheduled banks. If, thereafter, the Bank considers any further powers desirable it will no doubt report to Government.

INDIAN MILITARY ACADEMY

IMPORTANT CORRECTION

In the article entitled “ The Indian Military Academy ”, which appeared on page 114 of the **INDIAN INFORMATION SERIES**, dated September 15, 1938, there occurred a serious misstatement.

In the first paragraph of Column 1, page 114, there occurs the following sentence :

“ The commission given is not a King's commission—but it is called an Indian commission and confers on the holders the right of commanding Indian troops only.”

This is incorrect, and the following should be substituted :

“ The Commission is given in the Indian Land or Air Forces by His Excellency the Viceroy and Governor-General acting on behalf of His Majesty the King Emperor. It is similar to the Commission held by Dominion Force Officers and provision has been made for the exercise of powers of command over British personnel.”

MR. JAGADISH NATARAJAN NEW DEPUTY PRINCIPAL INFORMATION OFFICER

Mr. Jagadish Natarajan has been appointed Deputy Principal Information Officer to the Bureau of Public Information, Home Department, Government of India, with effect from September 19, 1938.

Mr. Jagadish Natarajan, who is thirty-six years of age, has had thirteen years' experience of Indian journalism. He was Sub-Editor and in charge of an edition of the *Times of India* between 1925-28; he was appointed Chief Sub-Editor of *The Pioneer* in 1928, and Assistant Editor in 1934.

Mr. Natarajan has officiated as Editor of *The Pioneer* on three occasions, covering a total period of nine months, during the absence of the Editor, Mr. Desmond Young.

Mr. Natarajan graduated from the Bombay University with honours in History, Politics and Indian Economics.

Press Comment

Under the heading "A Good Appointment", *The Pioneer* published the following leading article on September 18:

"Journalists seldom receive much public recognition and their best work is done anonymously. This may be hard on them but it is a good rule that a newspaper should be a corporate effort in which individual personalities are sub-merged. For it then develops a personality of its own that survives changes in staff and even in ownership.

"We break the rule to congratulate the senior Assistant Editor of *The Pioneer*, Mr. J. Natarajan, on his appointment as Deputy Principal Information Officer with the Government of India, both because it is fitting that his services to the paper should be recognised on his leaving it and because the selection will, we believe, be welcomed by working journalists all over India, whatever their political views.

"He is an Indian, he is a working journalist himself and the son of a working journalist of distinction, he is a man of liberal sympathies and he was chosen entirely on his merits in the face of strong competition. His other qualities are known to his friends on *The Pioneer* and we have no doubt that they will make him an outstanding success in his new and responsible post. *The Pioneer's* loss is the Bureau of Information's gain."

VICEROY'S VISIT TO SRINAGAR

His Excellency the Viceroy, accompanied by Her Excellency The Lady Brabourne, was to have left Simla on a visit to Srinagar on October 11, but he has been obliged to cancel his visit and will go straight to Delhi, probably on October 18.

Any item in the INDIAN INFORMATION SERIES may be reproduced without acknowledgment.

COLONEL MUIRHEAD'S INDIAN TOUR PROVISIONAL PLANS

Colonel Muirhead, Parliamentary Under Secretary of State, has drawn up the following provisional plans for his tour of India, which he may modify after his arrival.

Colonel Muirhead is expected to arrive at Bombay by sea about October 6. He will stay in the Presidency for five or six days, and then proceed to the N.-W. F. P., probably visiting Kotah and Bundi *en route*. After a stay of about a week on the Frontier, he will go to Lahore, and thence to Delhi, which he will reach about the end of October. He will stay in Delhi for about a week, and then go on to Lucknow for a visit to the United Provinces. He next hopes to make a tour of ten or twelve days through Rajputana and Central India, and will then leave for Madras. After staying there for five or six days, he proceeds to Calcutta. He will probably leave Calcutta for Burma about the end of the first week in December, and will return direct to England from Rangoon by air about the middle of December.

INDIA'S MINERAL WEALTH INCREASED OUTPUT IN 1937

There has been an increase, over the 1936 output, of Rupees 5 crores and 69 lakhs, or 36.1 per cent, in the value of minerals produced in India in 1937, the total value being Rupees 21 crores 43 lakhs, says the Geological Survey of India.

Coal remained at the head of the list with a value of Rupees 7 crores 81 lakhs, but manganese displaced gold in the second place with a value of Rupees 4 crores 52 lakhs, as against Rupees 3 crores 4 lakhs for gold. Gold was, in fact, the only important mineral the output of which decreased in value, but the decrease was only by the trifling amount of 0.3 per cent.

The value of mica exported reached the figure of Rupees 1 crore 44 lakhs while the output value of petroleum Rupees 1 crores 37½ lakhs.

Percentage increases in value are shown by coal of 25.0, petroleum of 12.6, manganese ore of 202.8, mica of 56.5, building-materials of 10.6, salt of 10.5, copper-ore of 21.7, and iron-ore of 17.3.

Of the less important minerals, spectacular increases have taken place in the production values of the industrial minerals. Given in percentages, these are: ilmenite 35.7, chromite 38.2, refractories 87.8, magnesite 60.4, barytes 830.6, monazite 30.0, gypsum 20.5, fuller's earth 4.7, bauxite 748.6, graphite 270.4, asbestos 93.6, and apatite 26.3.

Apart from gold, decreases in value took place only in the case of minerals with unimportant and erratic outputs, such as steatite, diamonds, zircon, ochres, felspar, beryl, and garnet.

(See Table on the Next Page.)

INDIA'S MINERAL WEALTH

Statement of the total value of minerals for which returns of production in India are available for the years 1936 and 1937.

	1936	1937	Increase	Decrease	Variation per cent
	£	£	£	£	
Coal	4,699,128	5,872,364	1,173,236	..	+25.0
Manganese-ore (a) .. .	1,124,422	3,405,094	2,280,672	..	+202.8
Gold	2,293,113	2,285,404	..	7,709	-0.3
Mica (b)	689,963	1,079,702	389,739	..	+56.5
Petroleum	915,188	1,030,591	115,403	..	+12.6
Building materials .. .	658,501	728,562	70,061	..	+10.6
Salt	554,099	612,584	58,485	..	+10.5
Copper-ore	300,993	366,280	65,287	..	+21.7
Iron-ore	294,125	344,840	50,715	..	+17.3
Ilmenite	62,423	84,686	22,263	..	+35.7
Saltpetre (b)	86,273	84,048	..	2,225	-2.5
Chromite	45,450	62,826	17,376	..	+38.2
Refractory materials .. .	29,798	55,970	26,172	..	+87.8
Clays	(c) 22,057	24,158	2,101	..	+9.5
Magnesite	7,684	12,326	4,642	..	+60.4
Steatite	11,803	11,579	..	224	-1.9
Barytes	1,206	11,223	10,017	..	+830.6
Monazite	8,116	10,554	2,438	..	+30.0
Gypsum	7,396	8,913	1,517	..	+20.5
Fuller's earth	5,389	5,640	251	..	+4.7
Bauxite	548	4,650	4,102	..	+748.6
Diamonds	4,675	4,134	..	541	-11.6
Zircon	6,335	2,935	..	3,400	-53.7
Silver	2,528	2,432	..	96	-3.8
Tungsten-ore .. .. .	..	1,842	1,842	..	..
Ochres	(c) 2,557	1,292	..	1,265	-49.5
Graphite	331	1,226	895	..	+270.4
Asbestos	234	453	219	..	+93.6
Felspar	454	255	..	199	-43.8
Beryl	466	148	..	318	-68.2
Apatite	99	125	26	..	+26.3
Garnet	5	124	119	..	..
Bentonite	102	68	..	34	-33.3
Sapphire	1,682	41	..	1,641	-97.6
Tantalite	76	23	..	53	-69.7
Soda .. .. .	..	2	2	..	..
	11,837,219	16,117,094	4,297,580	17,705	+36.1
			+4,279,875		

(a) Exports f. o. b. values. (b) Export values. (c) Revised.

GOVERNMENT HELPS WOULD-BE AVIATORS

Scholarships for transport pilots, pilot instructors, wireless operators, ground engineers and research students are some of the means by which the Government of India have been assisting Indians to train for positions in the aviation industry.

In 1936, the Government of India gave two scholarships for the training of flying instructors. These two candidates have completed their course of training and are now employed as Flying Club instructors.

The two courses for instructors were repeated in 1937. One of the candidates was given training at the Bombay Flying Club and the other at the Delhi Flying Club. One has since completed the course and is employed as Assistant Instructor.

Government Instructional Plane

An Indian pilot who had already received an initial training and had been employed by Indian Trans-Continental Airways as probationary First Officer was given further training in the Government Avro X at the joint expense of the Government and the company. He has since been to England to gain experience of the new 'Ensign' type aircraft. He is now a First Officer on the Karachi-Calcutta service and it is expected that when the new landplanes come into service he will be employed as a First Officer on the London-Calcutta service.

Another Indian who was given a scholarship for training as a transport pilot in England should shortly complete the course. It is expected that he will then be employed by Indian Trans-Continental Airways as a probationary First Officer.

Commercial pilots nominated by Tata's and Indian National Airways have been given the opportunity of obtaining much needed experience of flying a multi-engined aeroplane. The Government Avro X has been made available for the purpose at half the ordinary flying rate. A similar opportunity has been afforded to other Indian commercial pilots and in all about a dozen pilots have taken the course.

Two scholars are now undergoing advanced engineering training in England and are due to return to India next year when they may be appointed as Assistant Aircraft Inspectors, Grade 2, on the staff of the Civil Aviation Directorate. Nine 'Examiners'—a lower grade in the aircraft inspectional staff—have been recruited. Of these, one is now in England undergoing special training and two others will shortly be sent on a similar course. The examiners will thus be enabled to obtain the higher qualifications necessary for promotion during the course of their service. Previously four ground engineers were given special training in England to fit them for responsible positions. Two have found employment in India and one in England.

In wireless, four scholars who were trained at the Aeronautical Training Centre were also given a short course at Government aeronautical radio stations. They obtained the Posts and Telegraphs Certificate of Competency as Operators. Three of these obtained employment with Tatas and the fourth has been selected by the Federal Public Service Commission for a further scholarship with a view to employment on the aircraft inspectional staff of the Civil Aviation Directorate. After an initial flying course at the Delhi Flying Club, he has proceeded to England for further technical training.

Indian Inventor Encouraged

Mr. P. P. Nazir, the Parsi student who invented a device to improve the lateral control of aeroplanes, continued his researches with Government aid up to April 1, 1938. He has taken out a patent in which the Government of India have an interest, and it remains to be seen whether the invention will now be taken up by a firm of aircraft constructors for development to the practical stage. It is possible that the British Air Ministry may interest themselves in the device.

Apart from the scholarships and assistance given by the Government of India a number of scholarships have been granted by the Local Governments and Indian States and private bodies.

The Madras Government gave a scholarship last year to a pilot of the Madras Flying Club for training in England. He has since returned to India and is now employed by Tatas.

The U. P. Government have formulated a scheme to assist the training of 10 candidates up to 'A' licence standard, 2 of whom will be selected for further training for 'A 1' licences. In all cases half the cost of the training will be borne by the U. P. Government and in specially deserving cases the Government may be willing to meet the full cost.

Six students for aeronautical training have been granted scholarships by the Trustees of the Parsi Panchayat Funds and Properties of Bombay amounting to Rs. 7,450. One 'A' licence pilot is to be trained for the 'B' licence at Karachi. Several others have been given assistance for a number of hours of flying or for training in ground engineering either in India or England.

At the Government subsidised flying clubs the number of pilots trained for licences in 1937 was 84. Sixty-four qualified for the private 'A' licence, 8 for the limited commercial 'A 1' licence and 12 for the commercial 'B' licence.

Nearly all the Indian pilots employed in India received their training or a good proportion of it through the subsidised clubs. Forty-one ground engineers and mechanics now in employment were also trained wholly or in part by the clubs. Thirteen out of 26 Aerodrome Officers at Government aerodromes began their careers as club trained pilots.

Altogether the clubs are able to claim that 109 members have found employment in aviation after gaining training and experience at the clubs.

THE "DEFENCE TALKS"

BRITISH GOVERNMENT'S STATEMENT

September 13, 1938

As was indicated by the Secretary of State for War in his speech on the Army estimates on March 10 of this year the Prime Minister at that time authorised the initiation of discussions regarding the role of the land and air forces in India in relation to the defence problems of India and the Empire.

Both the military and financial aspects of this question have been considered in detail. The outcome of these discussions at the stage so far reached has recently been considered by His Majesty's Government.

The need for early action to place the defence organisation of India on a more satisfactory basis is accepted. It has not been possible in the time available to reach agreement on all matters which have presented themselves for consideration in the course of these discussions.

But definite progress has been made, and in the light of this progress, an offer has been made by His Majesty's Government in the United Kingdom, subject to the approval of Parliament, to increase by £500,000 as from April 1 next the annual grant of £1,500,000 which has been paid to the Government of India since 1933 in aid of Indian defence expenditure in accordance with the recommendations of the Garraan tribunal. In addition His Majesty's Government in the United Kingdom propose to ask Parliament to authorise the offer to the Government of India of a capital grant up to five million pounds for the re-equipment of certain British and Indian units in India and in addition to authorise the provision of aircraft for the re-equipment of certain squadrons of the Royal Air Force.

The precise scope and cost of these proposals has not yet been determined in detail.

Further it has been agreed that four British battalions should be transferred from the Indian to the Imperial establishment; three Battalions will be transferred at once and the fourth will follow as soon as it can be conveniently arranged.

Finally in connection with the discussions which have taken place in London the Government of India have suggested that His Majesty's Government should send out an expert body of enquiry to India at the earliest opportunity to investigate the military and financial aspects of the problems on the spot, and to submit a report before discussions between the two Governments are carried to their conclusion. His Majesty's Government have accepted this suggestion and appointed an expert committee with the following terms of reference:

Terms of Reference

"Having regard to the increased cost of modern armaments, to the desirability of organising, equipping and maintaining the

forces in India in accordance with modern requirements and to the limited resources available in India for defence expenditure, to examine and report, in the light of experience gained in executing the British rearmament programme how these resources can be used to the best advantage and to make recommendations."

The expert committee, with which the Defence Department of the Government of India will be associated, will be presided over by Admiral of the Fleet Lord Chatfield. They will leave England during October and it is hoped they will be able to report early in 1939.

CASH CERTIFICATES AND MINORS

NO NEW REGULATIONS MADE

Reports have recently been current that there has been a new regulation introduced by the Posts and Telegraphs Department which precludes the fathers of minor children of communities other than Muslims and Hindus from cashing the Post Office Cash Certificates held in the name of their minor children. This is a misapprehension.

The Postal Department have made no new regulation.

Under the rules, Cash Certificates held in the name of minors can be paid to the minors on their attaining majority. During minority, when the value of cash certificates does not exceed Rs. 5,000, payment can be made to the father or, if he be dead, to the mother of the minor. When the value of the cash certificates exceeds Rs. 5,000, payment can be made only to the legal guardian.

The law authorities have held that, under the personal law of the Hindus and Muslims, the father or, if he be dead, the mother in the case of Hindus, and the father in the case of Muslims, is the natural guardian competent to obtain payment of cash certificates. But in the case of Christians and other communities, neither the father nor the mother is the natural legal guardian. The father or mother in the case of such communities has to produce a certificate of legal guardianship from a competent court. This is a question purely of the personal law of the investor. Any disregard of this law would lay open the Postal authorities to a suit for the recovery of the money, paid to the father or the mother, by the minor on attaining his or her majority.

The duty of the Postal authorities is merely to apply the rules under the law of the land and it is for the investor to assure himself of the legal position in which he stands to his charge before making any investment in the latter's name; it is for the investor to obtain legal advice on the point.

No discrimination has been exercised by the Postal Department against any community; it is purely a question of the personal law of the investor.

PRECIOUS STONES WHICH FLY

That nearly Rs. 1,00,00,000 worth of rubies, emeralds, diamonds and other precious stones have been carried to and from India in one year by the air services suggests the degree of security which the public have come to feel in air transport. A large share of the transport of gems and precious metals has been secured by the air lines in all countries.

Between 1931 and 1933 general merchandise imported by air at Karachi Airport amounted to Rs. 24,67,786 whereas precious stones alone were worth Rs. 35,66,407 and bullion and currency Rs. 3,17,902. In 1936 the general merchandise was only Rs. 7,87,384, but the precious stones were double the amount for the three years 1931-33 put together, being actually worth Rs. 70,27,503.

But this was surpassed by the figure for 1937 in which year Rs. 19,34,624, Rs. 21,39,802, Rs. 24,67,321 and Rs. 26,88,127 worth of precious stones were imported for each quarter ending March, June, September and December respectively, making a total of Rs. 92,29,874 for the whole year.

This wealth was carried by 342 aircraft that arrived at Karachi during the year—an average of about Rs. 27,000 per machine.

Apart from precious stones, Rs. 2,47,685 worth of bullion and currency notes were brought to Karachi by air during 1937, of which Rs. 1,18,647 were transported in the first three months alone. General merchandise imported at Karachi by air is maintaining a steady level of about Rs. 7,00,000 a year.

On the export side, whereas the general merchandise exported from 1931 to 1933 was worth Rs. 63,620, with an average of Rs. 21,207 per year, in 1935 it went up to Rs. 80,935 and in 1936 to Rs. 1,11,481. This was nearly doubled in 1937 when Rs. 2,13,483 worth of general merchandise was shipped by air from Karachi. The export of bullion and currency notes reached a high figure during the years 1931-33, being Rs. 13,02,700, while in 1934 it was only Rs. 1,03,930, and in 1937 Rs. 1,50,675.

POPULAR RADIO 2,161 NEW LICENCES

The month of July showed signs of the increasing interest in broadcasting. 4,995 licences were issued and of these 2,161 were new licences. This is by far the highest figure recorded at this period of the year and shows that the effect of the new stations of All India Radio is now beginning to be felt.

Of the new licences 605 were taken out in Bombay, 507 in Bengal, 303 in Madras, 304 in the Punjab, and 198 in the United Provinces. These increased figures during the summer show, it is hoped, that substantial increases in the number of listeners will take place during the coming cold weather when reception conditions will be at their best.

MR. BRIJ LAL SHARMA

NEW ASSISTANT INFORMATION

OFFICER

Mr. Brij Lal Sharma has been appointed Assistant Information Officer to the Bureau of Public Information, Home Department, Government of India, with effect from September 26, 1938.

Mr. B. L. Sharma, who is 32 years of age, has had ten years' experience of Journalism. He spent five years in Fleet Street, and since returning to India in 1933, he has been correspondent of several leading United Kingdom and Indian newspapers.

In addition to his journalistic work, Mr. B. L. Sharma has published articles on philosophy in the International Journal of Ethics, Chicago University, the Calcutta Review, and elsewhere.

CUSTOMS AND EXCISE REVENUE

AUGUST RETURNS

Returns received in the Department of Commercial Intelligence and Statistics, show that the total gross Indian Sea Customs revenue, including land customs but excluding salt revenue, collected in British India during the month of August, 1938, amounted to Rs. 2,30 lakhs as compared with Rs. 3,41 lakhs in July, 1938, and Rs. 3,78 lakhs in August, 1937.

The total gross Central excise duties on motor spirit, kerosene, sugar, matches, etc. amounted to Rs. 65 lakhs in August, 1938, as compared with Rs. 71 lakhs in July, 1938, and Rs. 54 lakhs in August, 1937.

The grand total of gross Customs and Central excise revenues realised in the five months, April to August, 1938, was Rs. 20,32 lakhs as compared with Rs. 22,61 lakhs during the same period last year. Of this amount import duties accounted for Rs. 14,94 lakhs, export duties for Rs. 1,49 lakhs, land customs and miscellaneous for Rs. 25 lakhs and Central excise duties for Rs. 3,64 lakhs.

Comparing the figures for April to August, 1938, with those for the corresponding period of the preceding year, there were decreases under import duties on artificial silk fabrics, iron and steel, motor cars, artificial silk yarn and thread, silver, liquors, coal-tar dyes, pneumatic rubber tyres and tubes, silk yarn and thread, paper and stationery, sugar, toys, games and sports goods, batching, fuel and lubricating oils, electric lighting bulbs, tea, raw silk, fabrics of artificial silk mixed with other materials, wireless reception instruments and apparatus, silk fabrics and cotton hosiery, and the export duties on jute raw and manufactured.

On the other hand, import duties on cotton fabrics, raw cotton, machinery, betelnuts, metals other than iron and steel, spices, railway plant and rolling stock, matches, match splints and veneers, tobacco and cotton yarn and thread, the excise duties on sugar and matches and land customs receipts showed increases.

Indian Information Series

Vol. III

New Delhi, November 15, 1938.

No. 18.

CONTENTS

	Page		Page.
Animal Cedes To The Machine	156	Sherlock Holmes In The G. P. O.	161
Training Pilots In India	158	Defence of India	163
The Future Of Rivers	160	" Sita's House "	163
Where Human Feet Never Trod	162	The Indus Valley	164
New Light On Indian History	164	Auxiliary Force Recruitment	165
Re-mummifying A Mummy	166	Tax Exemption Withdrawn	165
" Demons That Threaten Civil-ization "	168	Viceregal Ball At Calcutta	165
The Locust Menace	170	A New Kind Of Exam.	167
Wealth from Poison	172	Pilgrim Rate War	169
Assam's Emigrant Labour	174	India's Nutrition Problems	171
Indian Emigrants	175	Anything To Declare ?	171
Doctors Meet In Council	176	West Indies Commission	173
Medical Profession Overcrowded	178	Better Fruits And Eggs	177
Loyal Messages From The Princes	182	India's Mustard Oil	181
Jute Substitutes	159	On The Heights Of Sikkim	188
Better Cattle Fodder	159	Hundred Years Of Legislation	188
A. I. R. and " All-India Radio "	159	Gujarat Rajputana	189
		Practical Meteorology	189

ANIMAL CEDES TO THE MACHINE Progress of Mechanised Transport in India INDIA AND EUROPE COMPARED

How The Financial Problem is Being Solved

The world over animal transport is gradually giving place to mechanized transport. A similar process has been going on in this country. India cannot afford to discard animal transport altogether. On the other hand, she cannot ignore the value of mechanized transport. She has, therefore, to maintain a minimum requirement of animal transport and support it with the maximum mechanized fleet available. It is necessary at the outset to avoid confusion between mechanization of transport and mechanization of the G. S. units of the army.

The reasons which necessitate the maintenance of a minimum animal transport are the strategic and tactical requirements dictated by the type of country the Army in India may be called upon to fight in. Thus it is necessary to provide sufficient animal transport so as to enable columns on the North-West Frontier to operate away from roads on an "open all-pack" basis. Animal transport has also to be provided as first line transport for some units.

These requirements are not peculiar to India; other countries, which have a mountainous frontier, have to make similar provision. Italy is a case in point; besides her own Alpine frontier, the frequent disturbances in Ethiopia necessitate provision for pack transport in the establishments of the Italian Army; draught animal transport is being replaced by mechanical transport.

Italy is also considering the organization of certain divisions with first line pack and second line mechanised transport as obtains in India. During the last frontier operations in this country, an experiment was made in providing mechanised transport the carriage of pack animals wherever opportunity offered, with remarkable success. A similar plan is being introduced in Italy.

What are the factors which govern the progress of mechanization? The most important is finance, as the capital outlay on mechanical transport, as compared with animal transport, is greater; but it is not the only factor.

Civil Resources

Military mechanical transport depends on the civil resources within the country, particularly in view of the fact that outside supplies

may be cut off in the opening phases of a major war. On mobilization, fresh units can only be raised if vehicles, trained drivers and artificers, as well as spares to maintain the war fleet until a regular flow of supplies can be relied on, are readily available. Lack of these essentials would entail locking up a large sum of money in holding these essential war reserves in peace.

India is faced with peculiar difficulties as compared with European countries, for although mechanized transport is making great strides, it has not developed on well-organized and sound lines. There are no organized transport companies with efficient workshops. Expansion is largely in the direction of owner driven vehicles obtained on the hire purchase system. The sole object of the purchaser is to get as much work out of his machine as is possible within the given time, with the least expenditure on maintenance.

This is due, to a great extent, to lack of mechanical sense, and consequent lack of appreciation of the vital necessity of efficient maintenance. As a result, the Licensing Authority has to show extreme forbearance in renewing the licences of some of these vehicles, which are positively dangerous owing to lack of maintenance and adjustments. Conditions in Britain and Germany are very different.

In Britain, the civilian population is completely mechanized for all practical purposes. The light draught horse is almost extinct, and the use of the heavy draught horse is limited to those agricultural districts where fields are too small and too steep for mechanized cultivation. They are also used on certain specialized jobs, such as heavy haulage in the dock areas. There is, therefore, no civilian reserve of animal transport which can be relied upon in time of war, but the resources of civilian motor transport are immense and fully developed, both as regards production and maintenance.

Germany suffers from the initial handicap of a civilian motor transport which lags considerably behind that of England. Agriculture in that country is still carried on, to a great extent, with animals, chiefly in the eastern districts. Moreover, in the event of a war with Poland or Russia, heavy motor transport would be unsuitable, as that part of her territory is devoid of good roads.

Germany is also financially handicapped, her transport is still largely horse drawn, but efforts are being made to increase the proportion of mechanized transport, and already she has several wholly mechanized divisions.

Hitler's Austrian Coup

The recent advance of German troops into Austria, carried out by mechanised transport columns bearing troops and equipment with great rapidity over long distances, shows how efficient and considerable is her equipment. The important point to note here is the speed and comprehensiveness with which civilian mechanised transport was impressed—it formed a large proportion of the mobile columns that were used—as also the ease with which civilian drivers fitted into the military machine.

In India, the civilian driver generally has no knowledge of military service; whereas in Germany, owing to conscription, every civilian is a trained soldier. To remedy conditions in India and ensure an organized and efficient reserve, the Defence Department decided to introduce a system of subsidizing organized civilian mechanised transport units. These units are to consist of 30 working lorries with necessary personnel and workshops, and will be inspected periodically to ensure that they are maintained in a fit state for short notice mobilization. This, it is hoped, will steer civilian mechanised transport expansion in India along lines which will help in the building up of a sound and well-organized network of road transport, which is essential for civil purposes in peace and for the Defence Department in the event of war.

Financially, this is more practicable, for the requisite mechanised transport can be secured by replacing Government mechanised transport sections with subsidized sections, which are much cheaper.

Discipline And Courage

Actual fighting formations require trained mechanised transport columns accustomed to driving across country, if necessary, and disciplined to a point where men will carry on their duties in the face of attack; for the lives of the troops depend on the quality of the driver. Line of communication transport, on the other hand, does not require the same standard of driving and discipline, and though civilian drivers are not accustomed to driving in convoy along roads, this training can quickly be acquired.

Very strict attention to maintenance is, however, essential if constant stoppages on one way roads are to be avoided. It is for this line of communication work that subsidized sections are being developed; they will receive annual training in military duties and be maintained up to the requisite standard of mechanical efficiency. The expansion of the subsidy scheme cannot, therefore, be indefinite, as it is governed by the extent of regular mechanised transport allotted to line of communication duties.

Twenty Years' Progress

A brief summary of the reduction in animal transport and the growth of mechanical transport in the Army in India during the last twenty years is given below:—

Period	Animals	M. T.
In 1914	45,912	No organized M. T. Units.
In 1924-25	27,437	1,881
In 1931-32	19,131	3,042
In 1938-39	17,600	3,249

This Animal Transport and Mechanised Transport is at present organized into:—

Animal Transport

- 2 Training Companies at Lahore and Meerut.
- 22 A. T. Companies (Mule) with 1 pack and 3 draught troops each.
- 13 A. T. Companies (Mule) with 1 pack and 2 draught troops each.
- 1 A. T. Company (Mule) with 1 pack and 1 draught troop.
- 4 A. T. Companies (Camel) (Silladar), each of 10 troops.

(Please Turn to Page 181.)

TRAINING PILOTS IN INDIA

Empire Air Mail Gives New Impetus

INCREASE IN HOURS FLOWN AND PILOTS TRAINED

What of the Future?

The introduction of the Empire Air Mail Scheme, the provision of night flying facilities and the grant of large subsidies to the flying clubs by the Government of India have resulted in a substantial increase in the number of hours flown and the number of 'A' pilots trained.

The three-year agreement which the Government of India has with the subsidised flying clubs expires at the end of the current year. It is, therefore, of interest to review the results of the last two years.

The total amount of the subsidy grant distributed among the seven clubs was Rs. 1,43,128 in 1936-37, out of which Rs. 23,000 was debited against the Aviation Petrol Tax Fund. In 1937-38, Rs. 1,36,500 was distributed, out of which Rs. 21,000 was debited against the Petrol Tax Fund.

Revenue of about Rs. 51,000 accrues to Government in the form of Petrol Tax, Income Tax and Customs duty, from the activities of the flying clubs in India. The net expense of flying training to the country is, therefore, less than a lakh of rupees—a modest sum by present standards.

In 1936-37, the grant was distributed more or less evenly, and each club received roundly Rs. 20,000. In 1937-38, in making the distribution, account was taken of the number of flying hours performed by each club, as well as of the number of 'A' pilots' licences issued and renewed as a result of their activities. In addition, the inland clubs, whose costs are necessarily higher than those at the ports, received a certain benefit. In this way, the full budgetary provision was utilised, four clubs getting roundly Rs. 21,800 and the other three Rs. 19,800, 15,600 and 13,800 respectively.

Training Results

In 1937-38, 10,683 hours were flown by the subsidised flying clubs, against 8,782 hours the previous year. In addition, the flying clubs in the Indian States performed 2,985 hours' flying against 1,560 hours in 1936-37.

There has been no increase in the number of 'A' pilots trained over preceding years. The increased flying done by the clubs has been devoted principally to the training of commercial pilots, although the clubs do not earn Government bonuses for such training. The commercial nature of the clubs' training is borne out by the large increase in night flying: 344 hours in 1937, against 66 hours in 1936. This increase is also in part due to the night flying facilities which are now available at most of the aerodromes where the flying clubs are located.

The number of commercial pilots trained for the past three years was nine in 1935, eighteen in 1936 and twenty in 1937.

Demand Produced By The Empire Air Mail Scheme

Introduction of the Empire Air Mail Scheme early in 1938, has been responsible for a substantial increase in the number of persons actively

employed in civil flying in India. The table shows the total numbers employed by the aircraft operating companies operating wholly in India, who are concerned with the scheme:—

	As at 31-12-1936		As at 31-7-1938	
	E	I	E	I
Administrative	3	27	3	51
Pilots and wireless operators	5	7	2	24
Ground Engineers	5	10	6	13
Engineering Apprentices	..	7	..	4
Traffic	1	9	3	90
Others	..	41	..	73
Total	14	101	14	255

The increased activity of the flying clubs in India in the training of pilots which has been witnessed in 1936 and 1937 is largely due to the increased demand which has had to be met to provide for the above expansion.

One of the difficulties with which the operating companies were faced was in providing the advanced training which is necessary before a pilot, who has been wholly trained on the light types of aircraft such as are owned by the flying clubs, can be given charge of a larger type of commercial machine which has a higher performance.

The Government of India gave assistance by arranging special flying courses on their Avro-X aeroplane, and Tatas' established, at their own cost, in addition, what virtually amounted to an advanced flying training school. They also undertook the further training of wireless operators, whom they recruited from those candidates who had passed the wireless course at the Aeronautical Training Centre of India.

While the flying clubs provide the necessary regional centres for initial training, the need has been felt for an advanced aviation school.

Flying training is expensive and, with the present subsidy, the rate for flying even the light types of aircraft owned by the clubs, cannot be brought below Rs. 30 per. hour without loss.

One can hardly expect to see a substantial increase in the number of those taking up flying until it is cheaper.

Now that the Empire Air Mail Scheme is an accomplished fact, there is uncertainty as to what the next stage of development may be, for it is, unfortunately, a truism that civil aviation is not able to fly by itself.

If there is not to be retrogression, it would seem that the flying clubs in India will have to be given a fresh *raison d'être* as well as a new subsidy agreement at the end of the year.

Note.—The article entitled "Safe Air Travel", published on page 14 of the Indian Information Series dated January 15, 1938, gives further details of the training of pilots and the standards required.

JUTE SUBSTITUTES

ATTEMPTS ON INDIA'S MONOPOLY.

That the Jute industry of India has to keep itself well apprised of the attempts made by its foreign competitors to make inroads into the jute monopoly of this country is borne out by the interesting information about experiments—successful sometimes—to find substitutes for jute, contained in a Bulletin of the Indian Central Jute Committee.

A Japanese chemist has been able to perfect a new type of heavy paper for the manufacture of bags. The new product is said to resist water and sand better than hemp or leather; it even tends to increase in strength if left in water for prolonged periods. The Japanese army may use the invention in place of jute.

The Department of Agriculture of South Africa, after experimenting on brown hemp—an indigenous plant of the country—has come to the conclusion that it can be successfully cultivated in that country on a wide scale and used to replace jute.

In Italy a company has been floated for the purpose of growing jute in Ethiopia. If the experiments in Ethiopia fail, a substitute fibre will be tried.

A sack factory has been established in French West Africa and is, at present, using jute, but its ultimate object is to use some indigenous fibre.

The Indian figures of production, manufacture, export and stock of jute, special report from the Argentine correspondent of the Committee, U. S. A. figures of export, import, stock consumption and prices of jute and jute goods; production and condition of different U. S. A. crops; export, import and prices of jute and jute products in the United Kingdom and the conditions of the jute industry abroad are contained in the Bulletin. A monthly report on the progress of the Indian Central Jute Committee's schemes of work upto the end of September 1938 is added.

BETTER CATTLE FODDER

CENTRAL COMMITTEE'S ACTIVITIES

To ensure an adequate supply of fodder to India's Cattle, the Imperial Council of Agricultural Research have set up a Central Fodder and Grazing Committee as a Standing Committee of the Council. This was in pursuance of a recommendation made by the All-India Cattle Conference held in Simla last year, as also by the Animal Husbandry Wing of the Board of Agriculture and Animal Husbandry. The personnel of the Committee includes representatives of provincial Forest, Agriculture and Veterinary Departments.

The first meeting of the Committee was held in November, 1937. It was decided among other things to prepare bibliographies about (a) Indian grasses, grass-lands and fodder trees, (b) erosion as connected with the grazing problem and (c) work in India on feeding tests.

The Provincial Committees which are now being set up will be working in close co-operation with the Central Committee. They have been requested to work keeping in view the following aims:—

- (1) breeding of quick growing and high quality fodders,
- (2) possibility of fodder growing in rotation and cutting it young and
- (3) the importance of carrying on investigations on the fodder value of pulses.

The United Provinces Government experiment of growing fuel and fodder plantations in the plains, known locally as "taungya" cultivation, was much appreciated by the Committee and it recommended this for experiment in other parts of India also. The scheme in the United Provinces has proved in forest areas most beneficial to the cultivator as a means of supplying poles, firewood and fodder, also giving good land for cultivation and at the same time allowing of regulated forest development. Investigations are now being undertaken for applying this system to lands remote from forests and in private lands.

Among other recommendations of the Committee, the following deserve mention: more experiments on the ensilage of grasses, inoculation of cattle to prevent rinderpest, the desirability of excluding goats from grazing in forest areas and a systematic survey of grass land in all provinces.

It is hoped that with the establishment of Fodder and Grazing Committees in all the provinces it will be possible to co-ordinate work and carry on intensive investigation on the fodder problems in India. Most provinces have now agreed to set up Provincial Fodder and Grazing Committees.

A. I. R. AND "ALL INDIA RADIO"

All-India Radio, which is the official name of a department of the Government of India, is in no way connected with or interested in companies or firms using the phrase "All-India Radio" as part of their trade names.

FORETELLING THE FUTURE OF RIVERS

Turbulent Waters Conquered

MODELS OF RIVERS GIVE NATURE'S SECRETS AWAY

Central Hydro-Dynamic Research Station Experiments

Fascinating experiments on scale models of the famous rivers of India carried out by the Central Hydro-Dynamic Research Station at Khadakvasla, near Poona, would delight the heart of a modern schoolboy. But these experiments with toy rivers are of vital importance to the happiness and welfare of millions.

An experiment carried out on a model at the Station related to a length of the Mula River at the Rahuri Causeway on the Ahmednagar-Manmad Road. When the causeway was built the existing ferry was moved upstream, but the conditions in the river changed to such an extent as to render the ferry unsafe. The object of the experiment was to find out an expedient which would make the surface flow normally to the ferry crossing, and so prevent jetting and return flow, maintaining comparatively natural uniform velocities all across the section.

As a result of the experiment made, two alternative solutions were proposed, one to construct a Burma spur shaped like a hockey stick, projecting from the convex bank, to deflect the main flow round the bend so as to create satisfactory flow conditions at the ferry, and second, to build a slab bridge on the Causeway, which would be open for traffic during normal floods, but would be overtopped for a few hours during severe floods. The latter method would eliminate the necessity for a ferry.

Another experiment related to the Fiaz Wah, which takes off the West Feeder in Khairpur State. The canal was taking more than its fair share of silt and an experiment has been carried out to ascertain what steps should be taken to prevent this. The head regulator was constructed taking off at right angles from the main channel. As a result of the experiments conducted, a safe solution suggested was the construction of a new silt excluding regulator at this site, which will be cheaper than building a new head near the upper end of the concave bend. This has been adopted.

170 ft. Model Of Indus

In the floods of 1936, the river Indus carried an exceptionally heavy charge of silt upstream of the Lloyd Barrage at Sukkur, and a large sand bank formed in the river extending from

the right bank almost across to the left bank. As a result, silting of the North Western Perennial Canal, which takes off on the right bank, has taken place. A model of 170 ft. length representing 7 miles above the Barrage and 3 miles below it, has been constructed at Khadakvasla, to assist in solving this important problem. Several difficulties have arisen in connection with this model but preliminary investigations are in hand to see whether the 1937 conditions can be attained from the 1936 conditions after running the model on a reduced time scale.

At the meeting held at Lahore in February last the Research Committee of the Central Board of Irrigation resolved that the Punjab Government be invited to consider the question of constructing alternative types of falls on one of the Haveli project canals. The suggestion was accepted and Mr. Inglis, Director of the Hydro-dynamic Research Station, was invited to submit a design for a fall at a site where the discharge is 700 cusecs. After carrying out some experiments Mr. Inglis submitted a design for a proportional standing wave flume meter fall with baffle, cistern and deflector.

Experiments were also carried out to determine what steps should be taken to restrict scour downstream of the head regulators of the Godavari right bank and left bank canals in the Bombay Deccan. The regulator of the right bank canal had three spans, the centre one of which provided with a bell-mouth sluice. One of the two outside sluices has now been closed and the other has been provided with an ordinary gate. Experiments tried showed how best the two remaining sluices could be regulated, and the methods have been applied with satisfactory results. Recommendations were also made for improving the Left Bank Canal Regulator.

Why Do Rivers Meander?

Methods to be adopted to prevent cross flow above the Barrage at Banbassa on the Sarda River were tried out on models. The main factors affecting the problem are:

A river tends to hug one bank or the other, and is unstable in any intermediate position; and though rivers often tend to flow in two or more channels, one channel is always tending to enlarge while the other

channels are tending to silt. This continues, until a limit is reached, when one of the silted channels begins to scour and the main channel to silt.

In general, a channel taking off from the upper end of the outside of a concave curve will scour, while a channel taking off from the inside of a curve will silt.

When a river is controlled, as at headworks, the river adheres tenaciously to one or the other bank, because a channel is strongly attracted by, and tends to flow along, the face of a masonry work or pitched bank; and a deep channel forms along its face. If the masonry work juts out into the stream, a deep hole is scoured outside its nose, and the stream is permanently held in this position. Several alternative proposals for training the river above the barrage will be tried out on the models.

Model Of The Ganges

Experiments were begun with a small model of the Ganges and three of its tributaries for an investigation into the meandering tendency of rivers carrying silt in an alluvial plain. The object was to reproduce qualitatively conditions such as occur in Bihar, to determine whether the wide variations in the positions of rivers—over a width of as much as 60 miles—can be mainly ascribed to the construction of flood embankments or whether it is natural.

The conclusion has been reached that there is reason to believe that the wide movement of Bihar rivers is natural, and though embankments must intensify the severity of changes, these would occur in any case, though more gradually and continuously.

In the Western Ghats, Bombay Deccan, water for the Pravara Canals is stored in the Lake Arthur Hill. When the dam was completed in 1926, the capacity of the lake was in excess of the demand for water, but, two years ago, water requirements exceeded the capacity of the lake. The matter was referred to the Khadakvasla Hydro-dynamic Research Station, and the Director, after a series of experiments, suggested that instead of constructing automatic gates, or siphon spillways, a wall might be constructed across the waste weir cut, the sectional profile being so shaped as to give a high co-efficient of discharge, *i.e.*, to induce a high discharge for a small head over the crest. With the adoption of the solution suggested, more water is now stored in the lake than before at small extra cost.

Look Before You Bridge!

Experiments on models are in progress in connection with a proposal to construct a railway bridge across the Brahmaputra River at Amingaon on the Eastern Bengal Railway, where the river is about half a mile wide. A suitable alignment for the bridge has been proposed and recommendations made for the guide banks and pitching. Experiments are being continued to determine the amount of scour that may be anticipated round the piers.

Experiments are also being made with the large scale model of the Ganges above the Hardinge Bridge to ascertain what changes are

likely to occur in the river course during the next few years. In order to make sure that the results of the experiments correctly show what will actually happen, it was decided to have some preliminary experiments to see if the changes, which had occurred in the river during the past few years, could be reproduced in a model. The experiments are in their early stages, and although the course adopted by the model is not identical with that of the prototype, the general conditions of the flow have been reproduced correctly.

Lest The Jumna Leave Delhi

How to keep the course of the Jumna River close to the Delhi Gate pumping station, which supplies water to New Delhi, was another of the important problems investigated on a model of a length of the Jumna River; recently the model has been increased in length by the equivalent of 3.3 miles to test whether the problem could not be solved by providing some short spurs downstream of the pumping station to "pull" the river across to it.

SHERLOCK HOLMES IN THE G. P. O.

POSTAL EMPLOYEES REWARDED

That a keen eye and an alert intelligence receive recognition is shown by the announcement of rewards by the Director-General, Posts and Telegraphs.

Mr. Muhammad Ali Khan, Task Work Messenger, Central Telegraph Office, Calcutta, has been awarded a sum of Rs. 15 by the Police, and Mr. Srish Chandra Bose, Sub-Postmaster, Khagra (Berhampore, Bengal), a sum of Rs. 20 by the Director-General, Posts and Telegraphs, in recognition of the valuable assistance rendered by them—by the former in a case leading to the arrest and conviction of man who attempted to defraud the Minister of Revenue, Orissa, by sending a telegram under a false name asking for a remittance of Rs. 400; and by the latter in the arrest and conviction of Kartick Chandra Das, late extra-departmental Branch Postmaster, Khundala (Suri), who absconded after mis-appropriating Government money.

Mr. A. J. Louzada, Inspector of Post Offices, Belgaum Division, has been awarded a Commendation Certificate by the Superintendent of Police, Belgaum, in appreciation of the good services rendered by him to the Police in connection with the investigation of a case of misappropriation of Government money.

The award has also been notified of a sum of Rs. 5 each to Messrs. Singh Das, Packer, Simla Head Office, Mohd. Shafi, Sub-Postmaster, Shahpur, and Nazimuddin Pramanik, Packer, Bogra Head Office, and of Rs. 10 each to Messrs. Ram Niwas Jaiman, Sub-Postmaster, Nagaur-Marwar; Madanlal Mittal, Sub-Postmaster, Naya Bazar, Ajmer, and Puran Singh, Packer, Lansdowne (Pauri) Sub-Office, for the intelligent detection of the use of previously used postage stamps, leading to the conviction of offenders.

WHERE HUMAN FEET NEVER TROD BEFORE

Nanda Devi Basin Survey

INNER SANCTUARY PENETRATED

In the Land of Eternal Snows

A successful survey, remarkable of its kind, has recently been completed by the Survey of India, of the basin of Nanda Devi, at an altitude of 18,500 feet, whose 'Inner Sanctuary' has been defying for years past all human endeavours to penetrate it.

Twenty-five thousand six hundred and forty-five feet high, Nanda Devi is the highest mountain in Garhwal, and as the crow flies, it is only 60 miles northeast of Ranikhet from where it shows up as a fine rocky dome over the eastern ridges of Trisul. For over 50 years it has tantalised mountaineers.

The difficulty has not been to climb the mountain—this was hardly thought of—but merely to reach its foot, for the peak is surrounded by a barrier ring of mountains, which nowhere sinks below 18,000 feet above the sea level, except where the Rishi Ganga escapes westwards through one of the most terrific gorges in the world.

To pierce this circle of defences has been the hope of no fewer than nine mountaineering expeditions since 1883, but none has succeeded in crossing into the inner basin, although the edge was reached twice.

No human feet ever trod this basin, known as the Inner Sanctuary, till in 1934 a small expedition, consisting of Messrs. E. Shipton, H. W. Tilman and three Darjeeling porters, forced a way up the last four miles of gorge of Rishi Ganga. Not only did the party explore the basin, but they also brought back a rough plane-table survey.

The Survey of India determined to follow up this fine achievement without delay. An officer with mountaineering experience was put in charge of the work and by good fortune Mr. Shipton found it possible to accompany the party as well. With his help the small survey party and their delicate equipment safely traversed the cliffs of the Rishi Ganga gorge and arrived at the foot of Nanda Devi on September 18, 1936, with rations for 39 days.

From the last village it had taken eight days to reach the mountain, a distance of about 12 miles as the crow flies. The route taken, however, included in addition climbs of at least five miles in the vertical plane.

Photo Survey

As, because of approaching winter, it was not possible to maintain a surveyor in the basin, except for a limited time, photo survey was considered to be the most suitable. Thirteen photo stations were accordingly established round the basin at an average height of 18,500 feet, from where a series of overlapping photographs were taken. A special survey camera was used for the purpose and a complete panoramic view was taken.

Owing to clouds in the morning, the station had to be reached and photographs taken as soon after dawn as possible and even then several stations had to be visited more than once. From these photographs it has been possible to map the whole of the Inner Sanctuary, an area of some 108 square miles. A plane-table survey was also made of the western portion of the basin. The highest station occupied in the basin was one at 19,400 feet.

Ideal Pasture

Mostly occupied by glaciers, which run round the foot of Nanda Devi, the basin extends north and south for a number of miles, permanent snow and ice clothe the surrounding walls wherever the terrain is not too steep to retain it, avalanches from the precipitous slopes are terrifyingly frequent.

Below the glacier snouts, a mile or two inside the basin, is an area of gently sloping grass land, an ideal grazing ground for sheep, if only the shepherds could get them there. The local herdsmen are wonderfully hardy and it is amazing to what high and remote pasturages they will take their flocks, but hitherto they have not managed to reach the Inner Sanctuary. Now that the age-old virginity of these remote places has yielded to the enterprise of man, it will be interesting to see if they can make a feasible path along the precipitous sides of the gorge.

Herds of bharal and Himalayan antelope were seen in the basin and Mr. Tilman describes in his recent book on the conquest of Nanda Devi how the herds of animals found in the 'sanctuary' of this mountain came up to the visitors completely fearless. It has been suggested that the Nanda Devi may retain this name as a game sanctuary for all time to come.

Original Survey

The survey of Garhwal was originally carried out by the Survey of India between the years 1874 and 1878. The position of the prominent peaks had previously been accurately fixed by triangulation and the plane-tables filled in the details of the mountains and valleys in between. At the time of this first survey little interest was taken in the mountains and the surveyors were, therefore, instructed not to waste time over high uninhabited regions, with the result that the higher mountain areas were sketched in from a distance, sometimes very inaccurately. In recent years, however, mountaineers and explorers have been coming to the Himalayas in ever increasing numbers, and these old maps, which amply serve their original purpose, are no longer good enough.

In 1935, a new survey of Garhwal was started to satisfy the growing demand for more accurate maps of the Himalayas, and the Nanda Devi Expedition was a part of this programme. The maps of this area when published from the new surveys, will, it is hoped, provide information of the greatest value to climbers and other visitors to this interesting section of the great Himalaya.

DEFENCE OF INDIA

EXPERT COMMITTEE APPOINTED

The composition of the Expert Committee on Indian Defence, the formation of which was announced by the Hon'ble the Finance Member in the Legislative Assembly on the 13th September 1938, is as follows:—

Chairman:

Admiral of the Fleet Lord Chatfield, G.C.B.,
K.C.M.G., C.V.O.

Members:

Sir Ernest Strohmer, G.B.E., C.B.,

Lieut.-General Sir Bertram N. Sergison
Brooke, K.C.V.O., C.B., C.M.G.,
D.S.O.,

Air Vice Marshal C. L. Courtney, C.B.,
C.B.E., D.S.O.,

Major General C. J. E. Auchinleck, C.B.,
C.S.I., D.S.O., O.B.E.

Secretary:

Mr. S. K. Brown, C.B., C.V.O., (India
Office).

Assistant Secretary:

Mr. M. J. Dean of the Air Ministry.

The following will assist the Committee:—

Paymaster R. C. Jerram, C.B.E., D.S.O.,
who will act as private Secretary to
Lord Chatfield.

Mr. A. J. Newling, M.V.O., T.D., of the
Finance Department, War Office.

Major P. R. Antrobus, M.C., R.E., of the
General Staff, Army Headquarters
(India),

Staff Officer attached to the Committee
during their stay in India.

The personnel of the Committee coming from the United Kingdom were expected to leave London on October 26, arriving at Bombay on "S.S. Strathaird" on November 6, and at Delhi on or about November 8.

The terms of reference which were given in the Hon'ble the Finance Member's speech of the 13th September are as follows:—

"Having regard to the increased cost of modern armaments, to the desirability of organising, equipping and maintaining the Forces in India in accordance with modern requirements, and to the limited resources available in India for defence expenditure, to examine and report, in the light of experience gained in executing the British re-armament programme, how these resources can be used to the best advantage, and to make recommendations."

It is expected that the Committee, which has already been taking evidence in London since the beginning of October, will take the evidence of experts in Delhi, and it is hoped that their report will be completed early in 1939.

"SITA'S HOUSE"

ANCIENT MOUND TO BE PROTECTED

Orders have been issued by the Central Government to bring under protection a large mound at Rajim in Mahakoshala or Dakshina Koshala corresponding roughly with the present Chhatisgarh Division of the Central Provinces. It is proposed to start systematic excavation at the mound as soon as funds permit.

Situated on the western bank of Mahanadi Rajim is one of the most ancient places in Mahakoshala, and has two temples. One, Rajivalochan temple, is famous and bears a name closely connected with Rajim itself. The other temple is dedicated to Rama-Chandra. Neither temple, as they stand at present, can claim any high antiquity.

The mound, which is now brought under protection is known as 'Sita Baree' (the house of Sita), and is considered to be the oldest part of Rajim. Large sized bricks, which are a sure indication of the antiquity of the place, have been found strewn over the mound along with broken potsherds, which indicate a date at least as early as the 3rd-4th Century A. D.

NEW LIGHT ON INDIAN HISTORY

Archaeological Discoveries in Rewa

1,600 YEARS OLD INSCRIPTION

Ancient Culture In The Indus Valley

A discovery of outstanding importance, made by the Archaeological Survey of India, is reported from the Rewa State in the Baghelkhand Agency of Central India. As many as twenty-three inscriptions, hitherto unknown, mostly of third and fourth Centuries of the Christian era, have been brought to light in Bandhogarh in the State.

The inscription relate to one of the darkest periods in Indian history, between the disappearance of the Kushana Empire and the rise of the Gupta kings. The discoveries are, therefore, of great importance to all students of history.

The language of most of the inscriptions is mixed Prakrit and Sanskrit, and the script is Brahmi prevalent over 1,600 years ago. The dates given in the inscriptions range from the year 51 to 90 of an unspecified area, and the mention of seasons, fortnights and days is in accordance with the data found in the Muttra inscriptions of Kushana period.

The names of three rulers of a hitherto little known dynasty are found, namely, Maharaja Vasithiputa Bhimasena (year 51), his son Maharaja Kochhiputa Pothasiri (years 86 and 87) and his son Maharaja Kosikiputa Battadeva or Bhadadeva (year 90). So far only one inscription of the first named ruler was known from a seal found at Bhita in the Allahabad District.

The close connection of the Rewa territory with the Allahabad region is further proved by the occurrence of the names of other rulers so far known only from records found at Kausambi. One of these is a ruler named Sivamagha and the other is Vaisravana. An inscription of the last named ruler dated in the year 107 was recently found near Kausambi, but the inscriptions found at Bandhogarh supply further information that this king was the son of the Mahasenapati Bhadrabala.

Besides the rulers, ministers, including a minister of Foreign Affairs, merchants and guilds (which were so powerful in ancient India), from far off cities like Kausambi, Mathura and Parvata, figure among the donors, whose gifts are recorded in these inscriptions. It is interesting to observe that the object of the donations was the dedication of cave dwellings, wells, reservoirs of water, gardens, etc.

For Physical Culture

A unique record mentions the construction of a gymnasium (vyayamasala) which bears testimony to the attention paid to physical culture by the ancient Indians.

The series of records are being published in the Epigraphia Indica by the Government Epigraphist for India, who is responsible for these discoveries.

Situated on an isolated spur of the Vindhya range south of Rewa, to the ruling dynasty of the State, Bandhogarh is of paramount importance, as is shown by the fact that among the titles of His Highness the Maharaja occurs 'Bandhavesh', 'the lord of Bandhav or Bandhogarh'. Usually, the privilege of visiting Bandhogarh is restricted to the inhabitants of Rewa, but in view of the enlightened interest taken by His Highness the Maharaja Sahib in the scientific and historical exploration of the place, Dr. N. P. Chakravarti, the Government Epigraphist for India, was, as a special case, permitted to visit the site in March last, and the result has been the present discoveries.

THE INDUS VALLEY

Discoveries throwing new light on the successive cultures that flourished in the Indus Valley in the third millennium B. C. have been made. Overlying the main cultural stratum contemporaneous with Mohenjodaro, there have been found two later ones, which appear to belong to a people unconnected with the earlier civilization.

This interesting information is given in the latest Annual Report of the Archaeological Survey of India for the year 1935-36, which records the arrival during the year of the expedition of the American School of Iranian and Indic Studies. Dr. F. J. H. Mackay, formerly of the Archaeological Survey, was the Field Director of the expedition.

Chanhudaro in the Nawabshah District of Sind was the site selected for excavation by the expedition. That during the Mohenjodaro period Chanhudaro was an important industrial town, specializing in the manufacture of beads and toys, is one of the conclusions reached as a result of the excavations made. Discoveries have also been made, which show not merely what the finished articles were, but also the successive stages of making beads out of fresh agate nodules.

The departmental programme of excavation was fairly well spread over Northern India within the limited funds available. In Sind two sites in the Khairpur State, viz., Dijitakri and Kotasur have been explored.

The 40 feet high mound at the former place has revealed five strata illustrating the earlier and later stages of the Indus Valley culture, and also at Kotasur, pottery of late prehistoric period with interesting painted designs, both geometrical and animal, has been brought to light.

Eclecticism

At Taxila, the north-west portion of the monastery attached to the Dharamarajika stupa, was exposed, completing the lay out of the monastic complex. A hoard has been found of 500 coins, mostly of Vasudeva, the Kushan king, which fixes the date of the monastery as the 3rd Century A. D. Images of some Brahmanical deities, such as Vishnu and Kartikeya, have also been found at the place. The find of these Brahmanical images, in the Buddhist establishments of Taxila before their destruction at the hands of the Hun hordes, it is said, exemplifies once more the eclectic tendency of the Gupta Empire.

Fresh excavations in Bihar have brought to light two more monasteries at Nalanda, and some interesting early relics of Naga worship at the Maniyar Math at Rajgir. At Lauriya Nandangarh, in the district of Champaran, excavations were conducted in several mounds with a view to examine the character of the remains. These remains, according to conclusions reached, appear to be of several Buddhist stupas, some of which date back to as early as the 4th century B. C. At Nandangarh, in a mound 82 feet high, discovery has been made of a basement wall of a colossal structure, with a number of re-entrant angles.

City of Mahasthan

In Bengal an interesting monument consisting of 170 chambers of shafts, which present a curious honeycombed appearance, have been unearthed at the Medh mound near Gokul in the Bogra District. The monuments here are nearly 1300 years old, being of the 6th or 7th Century A. D. and, according to archaeologists, appear to have been within the suburbs of the city of Mahasthan.

Other discoveries made during the year include a number of sites consisting of burial chambers in rock or pottery vases and urns in Malabar, Tinnevely, Coimbatore, North Arcot and Cuddappah Districts in Madras, and an old brick monastery, close to the Somingyi pagoda at Myinagan in Burma.

In Jaipur a unique circular Buddhist temple of the 3rd century B. C. and a large monastery, which continued to be occupied up to the 1st Century A. D. have been brought to light by the local Director of Archaeological Survey.

The most important discovery of the year in Epigraphy, it is said, is that of four-stone pillars at Badva, in the Kotah State of Rajputana, recording the performance of a sacrifice by three sons of a Mokhari General, all dated in 295 Vikrama era, equivalent to 238 A. D.

AUXILIARY FORCE RECRUITMENT

FACILITIES FOR GOVERNMENT SERVANTS

The Government of India have recently modified the regulations governing admission to the Auxiliary Force (India) so that a greater number of Government servants may be enabled to enter the force voluntarily.

The unmodified Regulations made Commanding Officers responsible for seeing that persons enrolled in the active class would be available for military service when required. But Provincial Governments, Administrations and Heads of Departments were found to be unable to certify that all such government servants will be available for military duty when required. The result was that these persons were generally no longer permitted to join the commissioned or other ranks of the Auxiliary Force.

The Government of India therefore recently decided to qualify the Regulations so as to permit General Officers Commanding Districts to authorise the enrolment in the active class upto a maximum of 20 per cent officers and 20 per cent other ranks in each Auxiliary Force (India) unit of persons who cannot be always available for military service.

This will enable government servants to join the active class of the Force even if they are liable at times to be employed in a civil post from which they cannot be spared.

TAX EXEMPTION WITHDRAWN

Under the rules for the guidance of depositors in Post Office Savings Banks, interest on income-tax bearing securities issued by the Government of India, which are purchased through the Post Office and left in the custody of the Accountant General, Posts and Telegraphs, is exempt from income-tax, this exemption being limited, however, in the case of each investor, to securities of the nominal value not exceeding Rs. 22,500.

The Governor General in Council has now decided that this concession should be withdrawn in the case of all Savings Banks accounts with effect from 1st April 1939.

VICEREGAL BALL AT CALCUTTA

During their forthcoming visit to Calcutta Their Excellencies propose to give a Ball on Thursday, 22nd December 1938 and a Garden Party on Wednesday, 28th December 1938 at Belvedere.

Their Excellencies' Visitors' Book will be placed in the Enquiry Office at the Main Gate of Belvedere, Calcutta, daily from 8-0 A.M. to 7-0 P.M. from Monday, the 21st November 1938.

RE-MUMMIFYING A MUMMY

5,000 Year Old Ointments which are Still Potent

SKILLED RESTORATION WORK AT INDIAN MUSEUM

Zoological Survey's Ticklish Job

The Egyptian gentleman who has been lying in state—embalmed—for the last five thousand years and who at present graces one of the galleries of the Indian Museum, is now assured, according to experts, several hundred more years, thanks to the attention recently given him by the Zoological Survey of India.

Transferred to the Indian Museum, on its establishment in 1875, from the museum of the Asiatic Society of Bengal (now the Royal Asiatic Society of Bengal), Calcutta, the mummy has attracted the attention of thousands of visitors.

Of late, however, it was in danger of falling to pieces. The decay was particularly noticeable with its sarcophagus or cartonnage, which consists of two well-fitting wooden halves, hollowed out for the reception of the mummified human remains.

The initial mistake of separating the upper half of the cartonnage from the lower is mainly responsible for the damage, as this resulted in the mummy being fully exposed to the variable and highly damp climate of Calcutta and also made it possible for insects and other pests to get at both the cartonnage and the mummy. Further, some time during this long period of nearly 70 years both the cartonnage and the mummy had been damaged through some accident to the cases in which they were exhibited, while unskilled repairs of the cartonnage brought about further damage.

In view of the serious deterioration in the condition of the mummy, the Trustees originally decided that the bony parts alone should be preserved and, if possible, another specimen should be obtained for exhibition in the Museum.

On enquiry, however, it was found that it was no longer possible to bring mummies out of Egypt and the Trustees, therefore, desired that the existing specimen should be as thoroughly repaired, preserved and restored as was possible. The work of the restoration and preservation has now been carried out under the direct supervision of the Director and the Anthropologist of the Zoological Survey of India.

The two halves of the cartonnage, which were constructed out of the hollowed out trunk of a palm tree, had, as a result of age and climatic

action, become so fragile that a slight touch was sufficient to reduce the greater part of them to a powdery mass. After suitable treatment for the destruction of insects and other pests, the wooden material has been strengthened by impregnation with shellac and other preservatives, and the two halves reconstructed in their original form. It is believed that after reconstruction the cartonnage is in a much better condition than it was even when the mummy was originally received in the Museum.

On the mummy itself, the main work has consisted in re-bandaging the mummified body after preservation of the flax cloth material and, to a certain extent, supplying fresh bandages to complete the wrappings where these had entirely perished. The preservative materials originally used have been wrapped in between the bandages as far as possible.

The really difficult task consisted in the preservation of the beautifully painted shroud which formed the upper covering of the mummy itself. This had almost entirely perished, particularly along the left half of the body, and that on the right half would powder at a slight touch. The preservation and restoration of these two halves have been successfully carried out.

No mummy is without its legends, and the mummy in the Indian Museum is no exception. While repairs were on, fantastic stories gained currency about its extraordinary and malicious influence on the workers who carried out restoration and preservation; none of them, however, suffered from any evil effects or illness, except that itching was caused in the skin of the arms and hands of the workers by the preservatives originally used at the time of the mummification, which had not lost its potency even after the lapse of four to five thousand years.

This was, however, already guarded against by the use of vaseline and other oily substances smeared over the arms and hands. No analyses of the preservative materials are being carried out, and, in any case, this would not have been possible without destruction of the mummy itself.

The mummy is that of a man and seems to be of the period 3,000/2,000 B. C. Owing however, to the unfortunate perishing of the shroud with the greater part of its hieroglyphic writings on the left, it is not possible to carry out its identification further.

A NEW KIND OF EXAM.

FEDERAL PUBLIC SERVICE COMMISSION'S EXPERIMENT

The Federal Public Service Commission have for sometime been endeavouring to evolve a system of Examination that will reduce, if not eliminate, the personal idiosyncrasies of even the best examiners and enable candidates to submit brief categorical answers which can be valued with mathematical precision.

They propose, therefore, to introduce, as an experimental measure, a system that will substitute for the kind of question at present in use, questions such as follow:—

English Composition

Instead of asking candidates to compose sentences containing certain words in order to test the candidates' appreciation of the meaning of those words, they will frame questions such as:—

In each group below, select the numbered word that most closely corresponds in meaning with the word at the top of the group. Then on your answer paper indicate the number of the word you have chosen.

I. Air-tight.

1. Firm.
2. Light.
3. Dizzy.
4. Transparent.
5. Hermetically sealed.

Answers

5

3

Instead of requiring candidates to compose sentences they will ask them to decide which of a group of sentences is the best expressed. Thus:—

In each group below give the number of the sentence that in your opinion is better than any other in the group.

- I. (1) Entering the hall, the chair seemed to move.
- (2) When entering the hall, the chair seemed to move.
- (3) As one entered the hall, the chair seemed to move.
- (4) The chair seemed to move, to one entering the hall.

Answer

(3).

- II. (1) The dog barking furiously alarmed me.
- (2) The dog's barking furiously alarmed me.
- (3) The dog's furious barking alarmed me.
- (4) The dog barked furiously and I was alarmed.

Answer

(3)

- III. (1) It is very kind of you to invite me.
- (2) It is too kind of you to invite me.
- (3) It is too much kind of you to invite me.
- (4) It is much kind of you to invite me.

Answer

(1)

- IV. (1) He denied me to come in.
- (2) He refused me to come in.
- (3) He negatived my entrance.
- (4) He would not let me in.

Answer

(4)

General Knowledge

Instead of asking 'Who is Van Zealand?', they may require candidates to give the number of the statement that gives the right information about Van Zealand.

- (1) He is Premier of Belgium.
- (2) He is Premier of Esthonia.
- (3) He is Secretary of State for India.
- (4) He is an intermediary between the Magyars and the Czechs.
- (5) He is an intermediary between the Poles and the Czechs.

Answer

(1)

Mathematics

I. Instead of asking 'What is 4.5 per cent. of 60?', they may ask candidates to give the number of the solution that concludes the statement correctly in:—

4.5 per cent. of 60 is:—

- (1) 13½.
- (2) 270.
- (3) 2.7.
- (4) 00.27.
- (5) 4/3.

Answer

(3)

II. For 'If $1/a = 2/R - 1/x$, find the value of x ', they may ask candidates to give the number of the correct value of x , if $1/a = 2/R - 1/x$.

from

- (1) $2a - R$
- (2) $\frac{aR}{2a - R}$
- (3) $\frac{2a - R}{aR}$
- (4) $\frac{R}{2} - a$
- (5) $\frac{aR}{R - 2a}$

Answer

(2)

The Commission propose to apply the new plan in the first instance, to the next Ministerial Service (Typist and Routine Grade) Examination, in some of the questions in the Arithmetic and General Knowledge papers and will consider the question of its further extension in the light of the experience there gained.

“DEMONS THAT THREATEN CIVILIZATION”

Deforestation And Soil Erosion

NEED OF FUNDS

Presidential Address At The Central Irrigation Board Meeting

“Deforestation and soil erosion not only intensify floods and reduce the cold weather discharges of our surplus streams but they threaten our subsoil water supply and they impoverish the soil and reduce the output of agriculture. In fact, these two demons threaten the very basis of civilization and of human life itself and it is high time that Governments combined in concerted defence measures.”

This remarkable statement occurs in the Presidential address delivered by Mr. M. R. Richardson, C.I.E., at the ninth annual meeting of the Central Board of Irrigation, recently held in Delhi.

The longer these are delayed, continued Mr. M. R. Richardson, the more expensive will be the remedies and the more prolonged the period of recovery and of avoidable human poverty and want. A successful defence is of more vital interest to the generations that will follow us, but the initial responsibility is ours.

The uninformed layman—and even Ministers of Government who are, at any rate partially, informed laymen—is often almost oblivious of the disastrous results which follow from neglect of forests and ignoring of the problems of erosion. When asked to provide funds, he says ‘give me your proofs.’ Unfortunately, local proofs cannot be given till the damage is so serious and widespread as to be difficult of remedy. History affords many proofs. For example, Mesopotamia, China and America.

America is now fully alive to the disaster which threatens her and has even formed a special department of engineers to deal with erosion while her forests are actively fighting deforestation.

There are many indications that in parts of India conditions are, at least, as bad and, some times, worse than they are in America. For instance, the Ganges carries to the sea eight times the quantity of silt carried by the Mississippi and that from a catchment area less than one third the size.

It is not without significance that the highest recorded flood in the Ganges occurred in 1924 and that the lowest recorded winter discharge occurred in 1929. We have records of the Ganges for over 100 years and this period is long enough to exclude all seasonal cycles.

American Research

American research has found that during the years 1935 to 1937, the rate of run-off from completely denuded land, such as is only too common on the banks of some of our rivers, such as the Jumna and the Chambal, is twenty times greater than it is from preserved forests. During one month of the flood season in southern California a watershed, which had been burnt out 4 years previously, was denuded of 120,000 cubic yards of top soil or a depth of 1.4 inches per square mile. On a similar watershed, burnt out 19 years previously, the

denudation rate was only one tenth of this while in a watershed fully protected for the last fifty years the same rainfall only gave a denudation rate of one-thirtieth of this.

The fertility of the soil lies in its top crust and the removal of 1.5 inches of the surface soil amounts almost to a disaster. The unproductiveness of newly exposed sub-soil is well known and one might almost say that once the surface has been destroyed, fertility has gone for ever as far as the present generation is concerned. It seems to me quite reasonable to suppose that one of the most important factors contributing to the low crop yield in India is erosion by wind due to the absence of wind-breaks. The small amount of study that I have been able to give to this important subject has revealed to me the amazing amount of American literature available on the subject—in itself a proof of the importance attached to it.

Lord Linlithgow's Recommendation

The Central Board of Irrigation, said Mr. Richardson, was first constituted in 1927, as a panel of all the Provincial Chief Engineers of Irrigation with the Consulting Engineer to the Government of India on which the Central or the Provincial Governments would be entitled to call for examination of a particular project or for report on any specific technical question on which advice was required. Two years later, the Royal Agricultural Commission under the Chairmanship of Lord Linlithgow recommended that a Central Bureau of Irrigation should be created, the main functions of which would be to establish and maintain a library of Irrigation publications and to act as a clearing house of information.

This proposal was subsequently amplified and as a result, the panel was transformed into an active committee meeting at regular intervals with a full-time Secretary in charge of its office, library and information bureau. The Board has provided opportunities for the free exchange of information and experience on irrigation and allied subjects not only between Provincial irrigation officers but also the officers of other departments. In previous years we have been glad to welcome Agricultural officers at our meetings when matters of common interest

have been under discussion and Dr. Burns, Agricultural Expert, Imperial Council of Agricultural Research is expected to attend our meeting this year. We also will have the help of Dr. Gorrie, I.F.S., in discussing the effects of deforestation.

Fifteen Major Problems

The Board serves a useful purpose in assuring continuity of effort. I find that of the seven major questions considered at the first meeting of the Board, no less than six are still under consideration. This is clear evidence of the difficulty of the subjects and, in the absence of a body such as this it is probable that they would not have received continued attention and almost certain that our present knowledge would have been very inferior to what it is.

We are greatly indebted to the engineers and research workers of the Punjab for the fact that the design of weirs on sand no longer figures on our agenda. For the future the design of such weirs will not be a matter for speculation as it has been in the past and we can be assured that new works will not be liable to fail without warning as they have done on not a few occasions previously.

For the consideration of this meeting there are no less than fifteen major problems and it is almost certain that the great majority of them will be under discussion for some years to come.

Your Research Committee met informally at Lahore in February this year and there was, of course, the usual annual monsoon meeting in Simla. Your Research Committee has recommended that the cold weather meeting should now be regarded as an established convention. This proposal will be put before the Board for consideration in the course of our proceedings. In my capacity as President, I attended both the meetings and, though I am not a research officer, I can say with the utmost confidence that I learnt much on each occasion.

The question of Central Research will once more come to your attention and a proposal framed by your Research Committee will be put before you. You will be glad to hear that the Government of India have decided that the Station at Khadakvasla shall be continued for another five years.

One of the most difficult subjects you will have to consider is the effects of deforestation on irrigation projects. The nomenclature is not satisfactory omitting, as it does, all reference to erosion and to its effects on agriculture.

You will see from the Secretary's report and budget, said Mr. Richardson, that the Board's funds are only just sufficient to maintain our office as at present constituted but we are greatly handicapped and there is a large amount of useful work which remains undone on account of lack of funds.

I have every hope that in due course as the Provincial Governments realise the value of our efforts, they will see their way to increase the present small contributions they make.

The latest Government of India report on Irrigation says that in 1935-36 the value of crops grown under State Irrigation Works in British India alone amounted to 106 crores of rupees. The funds available annually to the Board are only half a lakh of rupees.

That Governments recognise the economic importance of irrigation to India today is clear from the number of new projects under construction or under consideration and I feel certain that this activity will continue in the future at an increasing speed. The Provincial Governments are fully aware of the need for development of the natural resources of their areas and are keen to use these to the best advantage. They are ready to admit the need of staff for construction but they are not so ready to admit the need of efficient maintenance.

In the older days with smaller populations and less pressure on the land and less desire for improvement in material conditions, one might be content with the standard represented by a rabi duty of 150 acres per cusec. The present standard is much higher and if it is not maintained and improved, the results will soon be evident in great discontent.

But really efficient maintenance requires an adequate number of competent engineers and it will not be possible to secure these engineers unless the rates of pay and conditions of service offered are commensurate with those obtainable by men in other walks of life.

In fact, they should be better, for the life of an irrigation officer is hard.

His touring is more prolonged and expensive than that of officers in other branches. He is separated from his family for longer periods of time and he is faced with many difficulties in providing adequate education for his children. The same state of affairs applies to irrigation officials of all grades but it has not hitherto received the attention it deserves.

In conclusion, I wish to place on record my appreciation of the industry and able work of Mr. Gibling and his staff. This is the last Board Meeting for which we shall have the benefit of Mr. Gibling's service and we trust he will take away with him happy memories of four years' strenuous work as Secretary and that he will enjoy the leave he has well earned.

PILGRIM RATE WAR

During the last pilgrim season a rate war took place between the companies concerned in the trade. With a view to preventing a continuation of this rate war, the Honourable the Commerce Member intervened in the interests of the pilgrims and at his suggestion the two companies handling the pilgrim traffic have agreed that during the present season the return fare from Karachi shall not be less than Rs. 115. Fares from other ports will be adjusted accordingly.

This agreement has been entered into voluntarily by both parties and provided neither party resorts to practices which would render the agreement nugatory the arrangement will continue as an experimental measure throughout the present pilgrim season.

THE LOCUST MENACE

Central Warning Service Proposed

GOVERNMENT MEASURES

How Far Do Locusts Travel ?

The devastation caused by the locust to agriculture will continue to be subject to observation by the Locust Research branch of the Imperial Council of Agricultural Research. The scheme has been given a further extension pending a decision on the proposal to set up a permanent locust warning service, as recommended by Sir John Russell, in his report on the working of the Imperial Council.

The damage done by the locust to crops is so great that continuous observation of and the collection and collation of information about its behaviour in the breeding grounds is essential.

Locust Research was started in 1930 and a locust bureau set up at the same time. At present the Bureau's main function is to receive information from the various provinces and States in India and also from Arabia and Persia, to collect the information thus received and then to disseminate it to Agricultural Departments in the Provinces and States. The Bureau issues warning about locusts whenever necessary. It supplied sodium fluosilicate to the Baroda authorities to combat a small invasion of locust in November 1937.

The Indian Variety

Two kinds of locust are ordinarily observed in India—(i) the desert locust (*Schistocerca gregaria*) and (ii) the migratory locust (*Locusta migratoria*).

The former breeds in the deserts especially in years of increased rainfall. No extensive breeding of the latter class has so far been observed although specimens in the solitary phase have been noticed along with the desert locust.

The desert locust in the solitary phase is a permanent feature in certain areas of India and in these in years when breeding conditions are unusually favourable, rapid multiplication leads to the formation of swarms and eventual migration. Formation of swarms cannot, however, be prevented, but anti-locust measures can be taken immediately that the swarms arise.

India experienced her last locust cycle during 1926—31. A few insignificant swarms were still noticeable in parts of India during 1932—35, but in 1936 reports of swarm movements were totally absent.

In 1937, although activities of a few locust swarms in Egypt and Sudan were reported from the Imperial Institute of Entomology, London, there were no reports from within Indian limits, excepting two cases of fairly serious damage to cereal crops in the Sirohi

and Baroda States during October and November. Hoppers of the locust were found in large numbers on jowar millets, sugarcane and paddy crops, which, as a result, suffered total defoliation. The locusts disappeared by November when they had attained their winged stage.

Early and heavy monsoon rainfall in the Rajputana Desert area led to fairly extensive breeding of locusts during July-August 1937. It was feared that rains would lead to further multiplication which, with a favourable winter rains in Mekran, might have brought about a new locust cycle. A break in the rains during August, however, averted the disaster.

A Locust's Trek

That the migratory locust can cover enormous distances during its life is revealed by the observations made by the Locust Survey Staff in 1937.

During May and June, heavy breeding of the locust *migratoria* was detected in Kachhi and Bolan areas of Baluchistan. By July, however, few specimens were to be seen in these areas; on the other hand, a dense locust population was observed in parts of East Bikaner in July, followed by heavy breeding in these areas, as also by light breeding all over the desert area. By August-September, the whole population was found to have disappeared. It was presumed that they had migrated, not in swarms, but as a large diffuse body of individuals into Sirohi and Gujrat, bringing about the hopper infestation already mentioned. By the end of the year, few adults were noticeable in Gujrat and in the desert areas, whereas fairly large numbers were noticed in the juari fields along the Sind-Lasbela borders.

Besides considering the proposal for establishing a central locust warning service, the Imperial Council of Agricultural Research have financed a scheme, for a period of three years from April 1, 1936, for research into the biology and bionomics of the desert locust under the supervision of the Punjab Government Entomologist at Lyallpur.

The Imperial Council of Agricultural Research's locust research organisation includes a Desert Laboratory in South Baluchistan and observation posts there and in the Sind-Rajputana deserts. It is under the control of the Locust Research Entomologist at Karachi.

INDIA'S NUTRITION PROBLEMS

DIETARY SURVEY IN PROVINCES

Results of recent surveys carried out in the Madras Presidency, in Mysore State, in Assam, and in Kashmir, and of similar surveys in the Punjab, Central Provinces and Orissa have enabled deficiencies of the diets consumed in various parts of India to be defined, and have provided a practical basis for the adjustment of local agricultural policy to nutritive requirements.

The Nutrition Advisory Committee of the Indian Research Fund Association, under whose guidance these surveys have been carried out, also proposes in the near future to carry out investigations in Delhi Province, the United Provinces, Madras City, and other parts of India.

Nutrition and Agriculture

Sir John Russell and Dr. N. C. Wright, in drawing up their reports, published last year, on the work of the Imperial Council of Agricultural Research and the Dairy industry in India respectively, made considerable use of the data collected in these diet surveys, and Sir John Russell made the following recommendation:—

"The first need is to make a nutrition survey in each Province so as to discover what are the chief deficiencies in dietary; the medical authorities should then meet the agricultural experts to decide what crops, including fruits and vegetables, should be grown to supply the missing elements. The approximate quantities needed should be indicated, and the agricultural staffs acting along with the rural development authorities would then encourage by all means in their power the growth of these crops."

The dietary survey work which has already been carried out under the auspices of the Indian Research Fund Association and which will be extended to other areas in the near future, is in accord with this recommendation.

Further, a Liaison Officer has been appointed, who works in the Imperial Agricultural Research Institute at New Delhi, for the purpose of co-ordinating agricultural research and the requirements of human nutrition. Sir John Russell remarked that this officer should be of material assistance "for joint action by agriculturists and nutrition experts in improving the schemes of food production in the villages".

At Coonoor

The Director of the Nutritional Research Laboratories at Coonoor, which are maintained by the Indian Research Fund Association, is co-ordinating the activities of the field workers and experts engaged in nutritional research in the country. As hitherto, the emphasis has been on research likely to yield results of practical value; at the same time, however, it may be claimed that useful contributions have been made to the science of nutrition.

The activities of this Research Institute during 1937 included (1) systematic analyses of Indian foodstuffs, (2) diet surveys for assessing the nutritional state of the people, (3) the investigation of objective standards for detection

of malnutrition, (4) controlled diet experiments on school children for the evolution of well-balanced diets, (5) the training of Provincial Nutritional Workers, and (6) educational propaganda.

Early in 1937, a Health Bulletin containing all the available data about the composition of Indian foodstuffs "The Nutritive Value of Indian Foodstuffs and the Planning of Satisfactory Diets" was prepared, this being based mainly on results obtained in the laboratories. The Bulletin published by the Government of India at 2 annas per copy aroused interest, and over 20,000 copies have been sold; a new edition is now under preparation.

The main objective of the Nutrition Advisory Committee of the Indian Research Fund Association is to obtain a clear cut picture of the problem of nutrition in India, and to discover methods to improve the diet of the population which are feasible under present economic conditions.

HAVE YOU ANYTHING TO DECLARE?

INDIAN CUSTOMS TIGHTEN UP

Representations have been made in the past to the Government of India on the one hand, by certain Trades Associations complaining that the interests of Indian shopkeepers and traders are suffering as a result of the extent to which the free allowances admissible under the existing baggage rules framed under section 75 of the Sea Customs Act can be taken advantage of, or are being misused and on the other hand, by persons arriving in this country on a *bona fide* transfer of residence after residence abroad of more than three years, that they have to pay duty on their household effects which have been in use abroad for a considerable time but which are not covered by the baggage concession, even when the articles are of Indian origin or are articles which have paid duty in India once before, the customs exemption allowed in respect of reimported private personal property not being applicable when the reimportation takes place after three years from the date of re-exportation.

The Government of India have come to the conclusion that both complaints are more or less justified and that while the present regulations press with undue severity on persons coming to this country after a prolonged period of residence abroad, they are too liberal for others, particularly those who return to India after visits abroad which may be repeated annually and who are allowed on every occasion the full benefit of the baggage rules in respect of articles such as plated ware, linen, etc.

The Government of India have accordingly decided to amend the existing baggage rules, with effect from the 1st January 1939, in order to restrict considerably the free allowances and to exempt by notification under section 23 of the Sea Customs Act the personal and household effects of persons arriving on a *bona fide* transfer of residence.

WEALTH FROM POISON

Exploiting Plant Resources

INDIA'S UNDEVELOPED POSSIBILITIES

Gardeners Helped—Dr. Crippens Hindered

How far can India meet her own requirements of insecticidal plants, and what are the possibilities of cultivation, use and manufacture of vegetable insecticides in India?

These are amongst the problems which have lately been engaging the attention of the Industrial Section of the Botanical Survey of India, Calcutta.

More efficacious and less costly to produce, there has been in recent years a growing world demand for insecticides of vegetable origin, which are comparatively harmless to human beings, to replace more dangerous arsenical and other chemical preparations.

That the possibilities of opening up a new industry on these plants are by no means negligible, will be apparent from the fact that India offers both a good climate and soil for many of these plants of high economic value and a ready market for their products, as many of them are at present imported from abroad.

Among such insecticides mention may be made of Tuba root of commerce (Derris), Pyrethrum of commerce (*Chrysanthemum Cinerariifolium*) and Tobacco infusion, decoction, nicotine, nicotine sulphate, etc., produced from tobacco waste (*Nicotiana Tabacum*). The roots of Derris and flowers of Pyrethrum are considered to be essential ingredients of insecticides used as dust or spray.

Trade Elsewhere

Already the Federated Malaya States, the Dutch Indies, Phillipines, Kenya and Japan are doing an extensive trade in these plants. There has in recent years been an expansion of cultivation of Derris in Federated Malaya States. In 1935 the area under cultivation was about 6,500 acres; 1,000 to 1,200 lbs. of air dry root is being produced per acre and the estimated cost of production per lb. comes to about 6 annas. The export of the root has steadily increased from 98 tons in 1931 to over 600 tons in 1936, valued at about Rs. 4 lakhs.

In the Phillipine Islands, the Derris elliptica (Tuba) has been grown with such success that after meeting local needs, a substantial quantity of the roots is exported to the United States of America.

Tuba is also reported to grow wild in the forests of the Dutch Indies, and is, at present, being commercially cultivated in Java.

First known as Persian insect powder, and prepared from certain Pyrethrum flowers growing in the Caucasus and on the mountains on the north of Persia, the Pyrethrum insecticide or insect powder of commerce was later replaced by the Dalmatian insect powder obtained from the Dalmatian species of the flower which was found to be more active. This

particular species of Pyrethrum, from which the modern insect powder of commerce is obtained, is now largely cultivated in Japan and in Kenya Highlands.

From 25 Seedlings To 60,000 Acres

An enterprising farmer first put in only 25 seedlings in Japan in his own farm in 1896; in 1912 the area covered with this plant was 31 acres; but in 1937 the area had increased to over 60,000 acres yielding about 10,000 tons of dry flowers which brought a revenue of about Rs. 68 per acre.

In the Kenya Highlands the cultivation of this plant increased from less than 400 acres in 1933-34 to over 4,600 acres in 1936-37 producing over 1,000 tons of dry flowers of which more than 9/10 were exported bringing in a handsome revenue.

Experimental cultivation of this plant has been tried in several parts of India and in some cases the experiment has been successful, while in others success was only partial. But failures, too, have not been uncommon.

The leguminous plant Derris, of which there are a number of species found growing wild in India, has two commercially important species found and cultivated mainly in Federated Malaya States. These are Derris elliptica and Derris mallaccensis the roots of which are known in commerce as "Tuba" roots. Recently roots of Derris ferruginea, a species found growing wild in several parts of Assam have been found to contain the same active principle, "Rotenone" as in "Tuba" roots, in suitable quantities to be utilised as insecticide.

Best Insecticide?

It is said of "Tuba" or Derris elliptica that a decoction of the roots of this plant afford the best remedy for killing the insect that infests nutmeg trees and causes them to turn yellow, and that it is a useful insecticide for gardening purposes too.

Insecticidal preparations from Derris have been tried with success in Assam against biting

and sucking insects and in Madras against caterpillars which damage the cabbage crops. In Bengal, too, a preparation has been tried as spray against mango leaf hopper and found efficacious, but the cost is reported to have been high.

Pyrethrum is another plant, belonging to Compositae family, the flowers of which are used as an ingredient of insecticidal preparation. Though several horticultural varieties of this plant are grown specially for their flowers as a cold weather annual in the plains of India, and it is found also in the hills in the appropriate season, commonly known as Chrysanthemums, these have not been reported yet to have any insecticidal properties. The species from which flowers, used for insecticides are obtained, is not, however, thus grown.

Though a plant of the sea shore, it grows also on the inland mountainous localities and it has been found that sunny, pebbly calcareous soil on hill sides, dry and without irrigation and with fairly dry atmosphere, is suitable for the cultivation of the species which yield the insecticidal flowers.

Attempts are being made to cultivate "Tuba" in several parts of India, notably by the Dehra Dun Forest Research Institute and of the Agricultural Departments of Travancore, Kashmir, Punjab and Mysore; the plant grown in Mysore, in particular, gives a good yield of rotenone.

Analysis made at the Forest Research Institute, Dehra Dun, has shown that, while other species of Derris such as Derris robusta ("Korai") and Derris scandens ("Noalata") or ("Gonj") found in India contain little rotenone—the active principle on which depends the value of these products as insecticides—the roots of the Derris ferruginea found in Assam give fairly good results.

India Unexplored

A vast field, however, yet remains unexplored in Chittagong in Bengal and some parts of Assam where the several species of Derris are found to grow wild. It should be possible here to grow proper strains of Derris elliptica, the stock of which may be obtained from Malaya, and thus obtain a larger supply of rotenone. The Malayan plants do not take long to yield the expected results. Thus Mysore imported Derris elliptica ("Tuba") from the Federal Malaya States four years ago and grew the plant successfully, and two years old plant yielded 5 to 7 per cent rotenone.

Again, Pyrethrum has been successfully grown in Murree in the Punjab in experimental plots but its cultivation may easily be extended in other parts of India possessing suitable climate and soil, and proper strain may be obtained from Kenya.

From Tobacco Waste

Besides Derris and Pyrethrum, Nicotine and Nicotine sulphate (obtained from tobacco waste) have been greatly used as insecticides in foreign countries. Though the decoction

or infusion of tobacco waste has been used in India successfully against certain insects, the plant is not cultivated anywhere in India for insecticidal purposes. It is believed that there may be certain varieties of tobacco which can profitably be grown for the purpose and, when properly cured after harvesting, will possibly yield a percentage of Nicotine good enough for manufacturing insecticidal preparations.

Mention may be made of the following Indian plants which are reported to have insecticidal properties:—

(1) 'Kharina' (*Milletia pachycarpa*)—a large leguminous climber growing wild in Khasia Hills (Assam) and in the Sikkim Himalaya forests; the roots of this plant have been found to yield rotenone.

(2) 'Pilavaram' (*Mundulea suberosa*)—a small tree of Western Peninsula and Mysore; the bark, seed and root are reported to contain rotenone and it is said some trade preparations are being manufactured from it.

(3) 'Karanja' (*Pongamia glabra*)—a moderate sized tree, seeds and roots of which are reported to have insecticidal properties.

(4) 'Lashtia' (*Tephrosia candida*)—a shrubs, root bark and leaves of which are reported to have yielded rotenone.

(5) 'Neem' or 'Margosa' (*Melia Azadirachta*)—used in Sindh as preventive of insect attacks on clothes and books in libraries.

(6) 'Madar' (*Calotropis procera*)—used in the North-West Frontier Province against white ants.

(7) *Polygonum flaccidum* and *P. assamicum* reported to have insecticidal properties and recommended by the Agricultural Department of Assam.

(8) 'Turmeric' or 'Haldi' (*Curcuma longa*) used as repellant in Burma against red ants and mosquitoes.

WEST INDIES COMMISSION

INDIA TO BE REPRESENTED

In connection with the Royal Commission shortly visiting the West Indies to study social and economic conditions there, the Government of India, with the approval of His Majesty's Government, have decided to depute an officer to represent their views before the Commission and to assist Indians in the West Indies in the preparation of their case.

For this purpose the Government of India have selected Mr. J. D. Tyson, C.B.E., I.C.S. Mr. Tyson was Secretary to the Right Honourable V. S. Srinivasa Sastri, P.C., C.H., when the latter went as the first Agent in the Union of South Africa, and subsequently represented the Government of India before the Joint Select Committee in South Africa on the Transvaal Asiatic Land Tenure Amendment Bill in 1930. Mr. Tyson is expected to leave India early in December and will visit Jamaica, Trinidad and British Guiana, the three colonies in the West Indies where the Indian population is mainly concentrated.

EMIGRANT LABOUR IN ASSAM

Conditions in Tea Estates

NINETYNINE SCHOOLS FOR LABOURERS' CHILDREN

Tea Prices Improve

Nearly 26,000 labourers, says the Controller of Emigrant Labour in Assam, were recruited for tea gardens in both the valleys of Assam, during the year ending September, 30, 1937.

The labourers came from the provinces of Bengal, Bihar, Orissa, Central Provinces, Madras and the United Provinces, all of which are controlled emigration areas. Some came, in addition, from Bombay, emigration in which still is uncontrolled. The majority of recruits were from Bihar and Orissa, namely, over 14,500 from Bihar and over 7,600 from Orissa.

Tea garden labourers are mainly drawn from two classes, (a) small land-owners, and (b) agricultural labourers, who offer themselves for recruitment if the price of their agricultural produce remains low. Bad harvests and scarcity of the last year did not raise the prices sufficiently owing to the high cost of importation of foreign rice. Accordingly, the supply of labour was greater than the demand.

As before, recruitment was restricted by many employers to married couples only, but during the year no less than 124 couples confessed that they were not husbands and wives and falsely described themselves as married couples before the Local Forwarding Agents in order to get to Assam.

One hundred and sixtyone cases were detected in which prospective labourers who had come as assisted emigrants were found to have concealed their previous residence in Assam, in order that they might get repatriation again after three years at the employer's cost.

As usual, recruitment was carried on under the Sardari system, but nearly 1,300 labourers were also recruited otherwise.

There were a few strikes in which a number of labourers stopped work, demanding a reduction of their tasks and the supply of rice at concession rates. In one case, the whole garden struck, because the Manager threatened to withhold the pay of certain absentees. In no case, however, did the strike take a serious turn, and all ended in suitable adjustments of the demands.

Hockey and Football

Ninetynine schools were maintained in tea gardens for the benefit of the children living on tea estates. Arrangements for football, hockey and other games were made by the garden authorities for the recreation of the labourers and their children. Facilities for the observance of religious rites and festivals were given to all sections of labourers.

As in previous years, free housing, medical treatment, maternity benefits and, where available, free grazing and fuel and land for cultivation, sometimes at concession rates, and sometimes free of rent, continued to be given to the labourers.

The water supply was generally good in the gardens of Assam, and the sanitary conditions were on the whole satisfactory. Most of the gardens have their own hospitals and doctors, as well as highly qualified visiting medical officers.

Many garden labourers have settled down as cultivators in Assam and ex-tea garden labourers are reported to hold about 368,000 acres of Government land in the Assam Valley and about 38,000 acres in the Surma Valley. In addition, over 151,000 acres of garden land and over 16,000 of Government land are held by labourers still working in the gardens.

The consumption of country spirits rose from over 2,10,000 L. P. Gallons to over 2,32,000 L. P. Gallons during the year, but it was still 13.7 per cent. below the consumption of 1929-30. The increase was due to the illicit distillation by labourers on the gardens and by Nepalese in the neighbouring jungles.

Average Earnings

In the Assam Valley the average monthly earnings of men, women and children settled on the garden rose from Rs. 6-13-2, Rs. 5-10-4 and Rs. 4-0-2 to Rs. 7-3-5, Rs. 5-13-7 and Rs. 4-4-7 respectively. In the Surma Valley the average monthly earnings of men and children fell from Rs. 5-12-11 and Rs. 2-13-7 to Rs. 5-10-11 and Rs. 2-12-9 respectively and that of women rose from Rs. 4-0-1 to Rs. 4-1-10.

The total remittances by Money Orders from the tea districts to Assam to the Chief Recruiting Districts amounted to about Rs. 3,73,000. As compared with the last year, there has been a drop of about Rs. 37,000, because a large sum of money was carried personally by over 26,000 labourers repatriated to their home districts during the year.

The statutory repatriation of labourers began principally after a few months of the year had elapsed. During the year over 26,000 emigrant labourers and members of their families were repatriated by their employing interests for various reasons; out of this a little less than 25,500 were repatriated after completion of three years' terms, 641 on the deaths of heads of families, and 205 at their own request and the rest for other reasons.

No Complaints

Fortysix Local 'Forwarding' Agents' licences were granted during the year for recruitment of labourers in the controlled emigration areas, and no licence is reported to have been cancelled. The Agencies at Angul, Chanda, Gorakhpur and Hazaribagh were converted into Rest Houses.

Provision was made for the supply of meals in kind to repatriated labourer in lieu of cash subsistence allowance by the organisations through which they were originally sent to Assam.

In the course of his tours, the Controller of Emigrant Labour visited transit depots along the 'forwarding' routes and found that the arrangements for feeding and 'forwarding' were satisfactory. He often met parties of labourers who expressed their satisfaction with the treatment received from the recruiters engaged by the employing interests.

Out of over 29,000 labourers 'forwarded' by the Tea Districts Labour Association, the only deaths in transit were of 13 infants under the age of 4 years, one child below sixteen years of age and five adults. No casualties were reported to have occurred among the 1,376 labourers forwarded by Messrs. Medland Bose and Company Limited. Both the agencies retained the same medical arrangements for dealing with sickness.

The death rate in Assam was 22.92 deaths per thousand as against 36.58 births.

Broadly speaking, the condition of the tea industry in Assam was more satisfactory than during the previous year. There was an improvement in prices, largely due to the satisfactory stock position in London, but the severe drought in Cachar and Sylhet in the early part of the year, together with the outbreak of hostilities between China and Japan, were also factors contributory to the improvement.

A matter of major importance to the Tea Industry was the decision of the Government of India to introduce a bill to give effect in India to the New International Tea Agreement entered into by the two principal producing countries, and the measure is expected to ensure comparative security to the industry.

INDIAN EMIGRANTS

HEALTH : ESTATES : REPATRIATIONS

How Indian emigrants are given medical assistance at ports, what their health is, how they are treated in transit, how their estates are administered and how they are assisted to their homes—some of the many useful functions of the Protector of Emigrants—are described in the short annual report on the working of the Indian Emigration Act VII of 1922, and the Rules framed thereunder in the Presidency of Bengal, for the year 1937, published from Calcutta.

The year was remarkable for the fact that there was no emigration of unskilled labourers to countries abroad.

On the other hand a considerable number of emigrants returned to India during the year. They were 226 in number as against 995 in the previous year.

Of the number returned, 170 came from Fiji, 36 from Mauritius and 20 from the Union of South Africa. They all travelled as ordinary deck passengers.

No emigrant from British Guiana, Trinidad and Jamaica returned to India during the year.

Among the emigrants returned during the year there were 6 lepers from Fiji as against 7 lepers from British Guiana and Trinidad in 1936.

On enquiries made from the returned emigrants on arrival it was elicited that they had no complaints to make against the treatment they had received during the voyage.

The returned emigrants from the Union of South Africa were repatriated under the new scheme of Assisted Emigration. All these repatriates, including those who had personal savings, received from the Government of the Union of South Africa the equivalent of £20 as bonus in the case of an adult and £10 for a child on arrival in India.

Seeing Emigrants Home.

On arrival of the emigrants from Fiji, those who had sufficient savings with them made their own arrangement for their journey to their homes. In the case of paupers, they were sent to their homes at the expense of the colony. The paupers were paid a sufficient bonus to enable them to maintain themselves for some days after arrival at their homes so as to give them time to find work or to get in touch with their relatives or friends.

Emigrants from the Union of South Africa and Mauritius were all sent to their homes at the cost of the Government of the Union and the Colony respectively.

The general health of the returned emigrants was good and no report on the occurrence of any infectious disease among them was received.

The estates of deceased emigrants were administered by the Protector of Emigrants. Heirs in respect of 18 estates representing Rs. 7,941.1-7 in value were traced and the amount paid to them. The total number of estates finally disposed of during the year amounted to 22 which is roughly 51 per cent. of the aggregate number under administration, as against 30 per cent. in the preceding year.

Three estates valued at Rs. 429-5-7 and owned by emigrants who died in the Colonies lapsed to the Colonial Governments concerned as their heirs could not be traced in India.

DOCTORS MEET IN COUNCIL

Amendment of Act Recommended

RECIPROCAL RECOGNITION OF FOREIGN DEGREES

Medical Council's Tenth Session

That the Central Government be recommended to amend the Indian Medical Council Act, 1933, so as to make provision of the nature set out in clauses (a) and (b) of Section 120(1) of the Government of India Act, 1935, was decided upon at the tenth Session of the Medical Council of India, which met in October, under the presidency of Major-General E.W.C. Bradfield. The proposed amendment would complete the scheme of reciprocity in the recognition of British Medical qualifications.

The Council noted the correspondence carried out under the direction of the President with the following countries regarding reciprocity of recognition of medical degrees:—Victoria, New Zealand, Prince Edward Island, Nova Scotia, South Africa, and Manitoba.

It was decided that only those qualifications be recognised for teaching appointments in clinical subjects to which recognition was accorded by the Council.

The Council decided that such L. M. P. diploma holders of Madras as had completed the five year course and had passed the Intermediate examination might be exempted from passing the pre-registration examination in Physics, Chemistry and Biology.

Rao Bahadur Dr. A. L. Mudaliar was nominated by the Council as their representative to the Conference on Medical School Education and Khan Bahadur Dr. K. Rahman, O.B.E., was unanimously confirmed by the Council as their Secretary with effect from November 1, 1937.

The next meeting of the Council, it was decided, would be held on February 27, 1939.

The following is the full text of Major-General Bradfield's Presidential address:—

MAJOR-GENERAL BRADFIELD'S ADDRESS

"We welcome to our deliberations Lt.-Col. Shah, the representative of the Government of Sind, in place of Lt.-Col. Holgate who now represents the Government of Bombay.

"Under the instructions of your Executive Committee, inspections of the teaching facilities and of examinations in the subjects of Physiology, Pharmacology and Anatomy of all the Universities have been completed and the Inspectors' Reports have been forwarded to the Universities concerned for their observations. The Universities of Calcutta, Lucknow and Patna have communicated their remarks in regard to all these subjects while the Punjab University has sent in their observations in regard to Anatomy. On completion of all the replies a General Report will be drawn up by the Inspectors and submitted to the Executive Committee.

"You will remember that certain resolutions concerning the recognition of the Calcutta degrees by the General Medical Council were referred back to the Executive Committee. A note intended to clarify the legal position has been supplied to members and I hope will assist our further deliberations on the subject.

Andhra Medical Degrees

"A further important item for your consideration is the recognition of the medical degrees of Andhra. Under instructions of the Executive Committee, Andhra University was asked for detailed information as to how far the defects pointed out by the Inspectors have been rectified and also whether the University would accept an inspection on behalf of the Council. Two letters have been received in this connection—one from the Registrar, Andhra University, and the other from the Government of Madras, copies of which have already been supplied to the members. The recommendations of the Executive Committee will be laid on the table.

"As directed by the Executive Committee all the Universities whose degrees are on the First Schedule have been requested to furnish full details of the courses of instruction at present given and of the examinations held in the subjects of Hygiene and Public Health and to offer suggestions for improving the teaching of these subjects, specially Rural Hygiene. The replies so far received have been placed before the Executive Committee for their consideration.

"At their last meeting the Executive Committee postponed the consideration of the question of appointing visitors to attend the examinations in Basic Science Subjects. Further information has been collected in this connection and the matter has been placed before the Committee.

Progress In Midwifery Teaching

"In order to estimate what progress has been made and with a view to making a further survey of the teaching and examinations in Midwifery, the Universities included in the First Schedule have been asked to furnish a return

showing the number of labour cases available and the number of students trained during the year 1937 and to state whether any improvements have been effected since the Council's inspections.

"As a result of our further negotiations for a scheme of reciprocity replies have been received from Victoria, Prince Edward Island and Manitoba, and these have been placed before the Executive Committee.

"Information has been received that the Japanese authorities have no objection to the recognition in Japan of Indian Medical Qualifications in so far as they are recognised by the General Medical Council. Similarly the Japanese qualifications appearing on our Second Schedule are only those which are included on table 'J' of the British Medical Register. As regards direct reciprocal arrangements it was decided at the last meeting of the Council to request the Central Government to ascertain from the Japanese authorities which of the Japanese medical qualifications were proposed for recognition by us. Information has been received that the Central Government have addressed His Britannic Majesty's Ambassador at Tokyo on the subject.

"No reply has so far been received from the following Countries:—Northwest Territories and Yukon, Alberta and Newfoundland about reciprocal recognition.

"The question of prescribing recognised examinations under 'General Education' mentioned in your Recommendations on Professional Education has been engaging the attention of the Executive Committee and their recommendations will be placed before you.

"You are no doubt aware that the Stanley Medical School at Madras is to be raised to the College standard and affiliated to the University of Madras. The Registrar, University of Madras, has supplied a copy of the report of the Commission appointed by the University to inspect the Stanley Medical College. The gradual upgrading of the medical schools in India is a matter which I believe will continue to attract the attention of this Council, and I am sure you will agree that such an important advance will require our careful and sympathetic consideration.

"The minutes of the Council and of the Executive Committee for the year 1937-38 have been printed and bound as Volume III and a copy has already been supplied to the members.

"The five year term of the majority of our elected members will expire before our next meeting. It would be a grave infringement of the rules for me to wish any individual member success in the coming elections but I may perhaps be permitted to express the hope that the new Council will be equally well-endowed with that experience and goodwill which have been such a striking feature of the present Council.

"The duty placed upon us by the Indian Medical Council Act is the maintenance and control of the standard of uniform medical education in British India. The results of your labours are

published in the printed records, and I would like to take this opportunity of bearing testimony to the disinterested spirit with which the problems presented to the Council have been approached and to the real progress which has been made towards the establishment of a sound and acceptable standard of medical education in this country".

BETTER FRUITS AND EGGS NETWORK OF GRADING STATIONS

Consequent upon the passing of the Agricultural Produce (Grading and Marketing) Act by the Central Legislature in February, 1937 grading and marketing stations have been established in different parts of India by the Imperial Council of Agricultural Research during the year 1937-38.

The successful experiments carried out by these organisations amply justified the hopes entertained by the framers of this Act, although their activities are at present in the experimental stage. Their success gives rise to a certain amount of mild optimism about their possibilities in the agricultural marketing of India as a whole. Unless, however, sufficiently large quantities of graded produce are regularly available in the market it does not interest big buyers. It is, therefore, difficult at present to obtain the maximum premium on the graded goods. The result of the experimental period can only be taken as a guide and not as an indication of the full value which is likely to arise from a wider adoption of systematic grading.

Experimental Stage

To give a practical lead to all concerned the Central Marketing Staff initiated the grading and marking of different commodities at more than 30 centres. Although some of these grading stations were only running for a short period towards the end of year the total value of graded produce put out under the "Agmark" exceeded its 10 lakhs. The success achieved at these centres in spite of many difficulties clearly indicates that there is a demand for graded goods and that, particularly for perishables such as eggs and fruits, producers can in many cases secure considerably better returns by proper grading. Provincial and state marketing staff have assisted in establishing these grading stations and with the experience so gained, they should, it is hoped, if given necessary backing by their governments, be able to develop this side of the work very rapidly in the immediate future.

During the year 1937-38, grading stations for hides were opened in Delhi and Agra and for eggs, in Pabbi, N. W. F. P., in Kottakara and Chenganoor in Travancore and in Delhi and Calcutta. Grading stations for fruits were established in various parts of the country as the season for different fruits came round. In Nagpur and Sylhet, grading stations for oranges were established; Grape grading stations were opened in Nasik and Sheikh Mohammadi in the N. W.

(Please turn to page 187).

OVERCROWDING IN MEDICAL PROFESSION

Inadequate Supply for Villages

BETTER CLASS OF NURSE RECRUIT WANTED

Indian Medical Review

It is estimated that there are 35,000 to 40,000 qualified doctors now practising in India, and although a proportion of one doctor to roughly 10,000 of the population would appear to be inadequate, it is a fact that unemployment has become a serious problem among the younger members of the profession.

Careful enquiries, however, show that in many towns the proportion is as high as or higher than one to 1,000 and that it is the disinclination of members of an educated profession to settle in rural areas, which is responsible for this apparent overcrowding.

This statement is made by the Director-General, Indian Medical Service, in the "Indian Medical Review", a new publication which gives for the first time in a compendious collection useful information bearing upon science and practice of medicine in India, and the facilities available for training and treatment.

While the Central Government has responsibilities for medical research, port quarantine, higher medical education, and for medical and health affairs of areas under its direct administrative control, medical and health subjects are the concern of the Provincial Governments. Despite the fact that there are numerous hospitals and dispensaries in the country, rural areas are still without adequate medical provision. Want of adequate funds is, no doubt, the principal cause to which the existing state of affairs may be attributed, but absence of easy means of communication and the disinclination of the qualified medical men to settle in rural areas is also another reason.

This disinclination of the private practitioner to settle in rural areas is not peculiar to India, but is common to all agricultural countries. A professional man, who has passed successfully through an arduous and prolonged scientific education, is not generally willing to reside in a remote country area, where amenities are few and earnings meagre.

Provincial Governments are doing their best to lessen as much as they can the sufferings of the millions living in villages. Medical men are being encouraged to settle in rural areas. They are being given subsidies for the purpose and are allowed private practice. Rural medical relief is at present afforded through the agency of fixed and touring dispensaries, subsidized medical practitioners, unqualified village schoolmasters, practitioners of indigenous systems of medicine and Missionary doctors.

Provinces.	Total number of hospitals and dispensaries in province.	Average area served by each hospital or dispensary (sq. miles)	Average population served by each hospital or dispensary.
Madras	1,134	126	41,217
Bombay	420	180	41,940
Bengal	1,449	540	34,585
United Provinces	597	178	81,087
Punjab	896	111	26,318
Central Provinces	343	291	45,212
Bihar	528	131	61,310
Assam	343	160	25,138
Sind	108	429	35,991
Orissa	164	145	32,355
Delhi	24	24	26,510
North-West Frontier Province	114	118	21,272
Baluchistan	41	1,327	11,305
Ajmer-Merwara	10	271	56,029
Coorg	11	145	14,848

Provinces.	Expenditure on Medical Relief during 1936.					
	Per capita			Per Square mile.		
	Rs.	a.	p.	Rs.	a.	p.
Madras	0	2	7	53	2	5
Bombay	0	4	9	65	7	0
Bengal	0	2	1	84	0	0
United Provinces	0	1	0	29	0	4
Punjab	0	5	7	51	12	9
Central Provinces	0	1	5	13	11	10
Bihar	0	1	3	35	11	8
Assam	0	1	8	14	5	5
Sind	0	4	0	20	15	3
Orissa	0	1	6	23	5	8
Delhi	1	2	5	1,272	0	0
North-West Frontier Province	0	6	3	70	0	0
Baluchistan	0	8	8	4	9	9
Ajmer-Merwara	0	4	11	63	0	10
Coorg	0	11	2	71	9	7

Advisory Committees for hospitals function in almost all provinces. Their activities are confined to giving advice and making suggestions and also to looking after the welfare of the patients, the Committee thus forms a very useful liaison between the Government and the public.

The total number of beds available for maternity cases in the various provinces during the year 1937 was about 8,000.

As against this, nearly three million women are disabled temporarily or permanently every year as a result of pregnancy and labour, while maternal deaths arising out of pregnancy number over 170,000 and the tragedy is that probably 80 per cent. of these deaths were preventable.

X-ray facilities are also inadequate, there being in India only 83 major and 47 minor sets in the hospitals reported on.

Facilities for radium treatment exist to a limited extent, the total quantity of radium available being about 5,131 m. gms. available only in Madras, Bombay, Bengal, Punjab, Bihar, Assam, Orissa and Delhi, besides the small quantities in the hands of the private doctors.

Poor Patients Who Can Pay

Poor and indigent patients, both indoor and outdoor, are given free medical and surgical treatment in all provinces in India.

A complaint frequently made against the administration of Indian hospitals is that large number of patients who can really afford to pay are treated free of charge.

The problem is not simple, because modern scientific medicine is costly, and although a person may not be indigent as regards the ordinary

necessities of life, he often is in respect of even minimum requirements when sick.

On the whole the revenue obtained from the payments of ordinary patients, says the Director General, is not large, but fees paid by patients occupying private or paying wards should cover the cost to Government or the Hospital Management and in general do so.

Few private Nursing Homes exist in India, except in Calcutta, Madras and Bombay. In Bombay legislation on the lines of the Nursing Homes Registration Act of Great Britain to provide for registration and inspection of Nursing Homes is contemplated. When passed into law this measure should considerably improve the situation.

Good Nurses Wanted

There is considerable dearth of the right sort of material for training as nurses. Caste Hindus have for decades looked with disfavour upon nursing as a profession, though the prejudice is slowly breaking down.

Since 1934 a considerable change has taken place in the outlook of the Central and Provincial Governments. Nurses' and Midwives' Registration Acts have been passed in Madras, Bengal, United Provinces, Central Provinces, Punjab and Bihar.

In practically all the nurses' training schools in British India, a three years' period of training for nurses has been adopted and most hospitals work closely on the comprehensive syllabus laid down by the Central Nursing Council of England and Wales. Where this syllabus is adopted, there are two examinations. The preliminary one can be taken at any time after the completion of one year's training, but is usually taken at the end of eighteen months, and the Final on completion of three years' training.

Indigenous Medical Systems

For sometime past there had been a demand from the public of the Bombay Presidency for the recognition by Government of the Ayurvedic and Unani systems of medicine. There is accordingly now under consideration in the Bombay Legislative Assembly, a Bill which provides for the establishment of a Board of Indian systems of medicine and for the recognition by law of certificates given by registered practitioners of these systems. The Board is to prescribe the course of training and qualifying examinations, and no person shall be eligible for registration unless he has passed such an examination.

The Madras Government have already given a certain amount of recognition to the practitioners of the Indian systems of medicine, by appointing holders of the diploma in medicine of the Government Indian Medical School, Madras, as subsidized medical practitioners in rural areas.

The Punjab Government have appointed a Committee to suggest means by which necessary protection can be given to such practitioners.

The United Provinces contemplate adopting a system of Vaid and Hakims, and a scheme for subsidizing Vaid and Hakims is under consideration.

Medical Training

Medical Colleges built at Government expense were established in India at Calcutta and Madras in 1835, but it was not until 1906 that the need for higher teaching of a university standard was generally recognised. There are now ten University medical colleges, including one exclusively for women, established in India, while post-graduate training is given at the School of Tropical Medicine, Calcutta, the All-India Institute of Hygiene and Public Health, Calcutta, and at the Malaria Institute of Karnal.

While the Lady Hardinge Medical College, New Delhi, is meant exclusively for women students, in most of the other colleges, a few seats are reserved for women, and there are 322 such students at these other colleges.

Though at the Lady Hardinge Medical College, Delhi, students are admitted from any part of India, at other medical colleges seats are primarily reserved for local candidates. This Provincial preference means that students of many areas cannot obtain a higher medical education in India. Residents of Indian States, Central Provinces, North-West Frontier Province, Delhi and the centrally administered areas are especially affected, and the time has come, says the Director-General, Indian Medical Service, when the establishment of a new medical college in Delhi or at some other central place must be seriously considered.

High Standard Wanted

The first medical school in India was established in Calcutta in 1822. There are now 18 Government and 9 non-Government schools in British India, training a class of medical men and women known as Licentiates or Sub-Assistant Surgeons. Several schools began as Unani and Ayurvedic teaching institutions; but all of them have abandoned this system.

The considerations which have prevailed so far in continuing the licentiate course of studies no longer exist. Higher scientific education has become popular and there is not likely to be any dearth of well qualified candidates for admission to the Medical Colleges. The time has, therefore, arrived to adopt a uniform standard of medical education. The Government of Madras have already decided that with effect from 1938 fresh admissions to the Stanley Medical School, Madras, and the Lady Willingdon Medical School for Women, Madras, should be stopped. The former institution will be converted into a medical college for men and women.

The Medical Council of India was brought into existence by the Indian Medical Council Act of 1933, which placed on it responsibility for the maintenance of a uniform minimum standard of higher qualifications in medicine for the whole of British India. The Council carried out a detailed inspection of all the Indian Medical Colleges and their examinations, and as a result the medical qualifications of all the Universities, except those of the Andhra University, have now been reorganised.

The Medical Council of India has also framed a series of recommendations for professional education, which now govern the requirements and standards of University medical education in India.

The furtherance of the recognition of the Indian medical qualifications in countries outside British India, with its corollary, the reciprocal recognition in this country of approved qualifications of such countries, is another function of the Council. Non-Indian qualifications recognized by the Council till now are only those which have been accepted on a basis of reciprocity. The General Medical Council of Great Britain has accepted for registration in the United Kingdom all the degrees granted by the British Indian Universities which have been approved by this Council.

There are also various Provincial Acts of Medical Registration which provide for the formation of a Medical Council in each province, where such legislation obtains, and the registration of qualified medical practitioners. The functions of these Councils include, in addition, the supervision of medical education, inspection of examinations, exercise of disciplinary control over medical practitioners and that of advising the Local Government in regard to the recognition of the various medical qualifications.

A close study irresistibly points to the pressing need for immediate improvement of the profession of pharmacy in India and of the manufacture, sale and import of drugs included in the British Pharmacopoeia as well as of those which are known and approved.

Both Bengal and Madras have instituted advanced courses in Pharmacy, but they are not popular, mainly because the prospects for future remunerative employment are meagre. The probable solution would be to insist upon a reasonable standard of general education, such as is guaranteed by passing the Matriculation examination of an Indian University, an adequate course of training, including apprenticeship of not more than 9 to 12 months, and properly organised Provincial examinations.

INDIA'S MUSTARD OIL INDUSTRY

NATIONAL STANDARD NEEDED

Second in importance only to ground-nut, with an annual production of one million tons and cultivation extending to six million acres, is the mustard and rape seed oil industry of India.

Ninety per cent. of the crop is consumed for domestic requirements and of the 296,000 tons, average annual consumption from 1929 to 1936, consumed outside India, India contributed 81,000 tons—8 per cent. of the country's average annual production—by exports. To the study of this important industry is devoted Bulletin No. 13 of the series of Bulletins of Indian Industrial Research of the Industrial Research Bureau, written by D. Y. Athawale, Mr. J. A. Hare Duke, and Mr. P. N. Mathur.

For the last 37 years the cultivation and yield of mustard and rape seeds have remained fairly constant in India. Mustard seeds are extensively grown all over north India, from the Punjab to Assam, and the entire northern belt of India yields more than 90 per cent. of the total production. Comparing the area and yield of mustard seed in the various Provinces and States of India, we find that the United Provinces is leading since 1932, always keeping well over 350,000 tons. Bengal has been running second with 140,000 tons in 1932-33, 135,000 tons in 1933-34, 180,000 tons in 1934-35, 157,000 tons in 1935-36 and 180,000 tons in 1936-37.

The oil is generally obtained from seeds of the Brassica family comprising yellow and brown sarson, rai and tori. But as these species are always mixed when they come to the market, the oil millers are generally unable to purchase pure unmixed seed of any of the species. The oils from these mixtures are known indiscriminately as mustard oil.

The seeds are crushed by the oil millers and village oil-seed crushers or telies for the production of mustard oil, and on account of the good demand for this oil and the slightly better prices obtained for it in the market as compared with other edible oils, there is a strong inducement to adulterate it. The adulterants commonly used are sesame oil, linseed oil, arachis oil and, occasionally, niger seed oil. The Provincial Governments have therefore laid down technical standards for mustard oil under the provisions of the Indian Food Adulteration Act.

As a result of the wide variation of proportions of the seeds of the species commonly found in commercial supplies of mustard (rape) seed, there is considerable range of variation in the characteristics of genuine mustard oils produced in India, and hence the commercial need for

a national standard for mustard oil is suggested by the experiments described in the Bulletin.

The experiments show that the requirements of certain mustard oil specifications in force in India need to be relaxed in order that they may admit all genuine oils having characteristics within the ranges of variation shown to be a feature of commercial supplies of genuine seeds and oil. It is desirable that all specifications for mustard (rape) oil be drawn up in India on a national basis.

The fixed vegetable oils from the seeds of Brassica expressed by modern oil mills are an almost completely odourless and tasteless product, but the Indian market demands a strong pungent smelling mustard oil for edible purposes. The essential oil of mustard, with its characteristic pungent odour, is not present in the fresh seed as a separate constituent, and the pungency is developed in the seed by fermentation when the oil is expressed by the oil ghanni methods.

Modern oil milling plant can, however, be operated so as to produce edible mustard oil as pungent as ghanni-pressed oil if operated in accordance with the methods described in the Bulletin. The yield of oil from modern expressing plant is 2 to 2½ per cent. greater than that obtained from power driven ghannis and 4 per cent. more than that given by country bullock-driven ghannis. Moreover, modern expressing plant is much more economical in power consumption.

Animal Cedes to the Machine.

(Continued From Page 157.)

1 Zhoob Local Transport Unit (Camel) of 1 troop.

Mechanical Transport

6 M. T. Companies, each of headquarters and 4 sections, each section of 25 load-carrying, 30-cwt., vehicles, *plus* 1 L. A. D., *plus* 4 spares.

8 Independent M. T. sections, as above.

4 Independent M. T. sections, as above but lorries of 3-ton capacity.

10 Subsidy sections.

6 Motor Ambulance Units.

7 Workshop Companies, Class I.

2 Workshop Companies, Class II.

(Mobile repair units with mobile machinery).

Maintenance Group.

Technical Inspectorate.

Vehicle Reserve Depot.

Heavy Repair Shops (*i.e.*, reconditioning plant).

Central M. T. Stores Depot.

M. T. Depot.

R. I. A. S. C. School.

LOYAL MESSAGES FROM THE PRINCES

Ninety-eight loyal messages placing their services and those of their States at the disposal of the King Emperor in the event of a European war, had, by November 8, been received from Princes by His Excellency the Viceroy. To all His Excellency sent warm thanks in reply.

The messages are given below in the order in which they were received.

The Nizam of Hyderabad

In view of the political situation in Europe which is fraught with the danger of war. I place at the disposal of His Imperial Majesty all the resources of my State, as I did in the past on similar occasion, in the shape of services towards the British Empire in case of need.

The Nawab of Junagadh

In view of the present critical international situation, I hasten to offer to place my troops and the entire resources of my State at the disposal of His Majesty in case the British Government is compelled to enter into a war. Please convey this to His Imperial Majesty.

The Maharaja of Surguja

I have been watching with deep concern the present grave international situation and the possibility of a war. Our Premier's efforts to avert the bloodshed are commendable. I place my personal services and the entire resources of my State at the disposal of our beloved King Emperor. I am sure I am voicing the truest sentiments of my brother Princes in this Agency when I say that we all stand solidly rallied behind our Gracious Emperor in the present crisis.

The Raja of Bilaspur

The present situation in Europe brings imminence of war and the democracies of the world might again have to face the totalitarian States for the preservation of liberty and justice in mankind; under these circumstances I am to convey to Your Excellency, and through you to His Majesty the King Emperor, the unswerving loyalty and abiding faith of the people of Bilaspur in the British throne and to place our entire resources at His Majesty's disposal for whatever use they be deemed necessary.

The Maharaja of Kapurthala

I offer my troops and place unreservedly my humble resources at the King Emperor's disposal.

The Maharaja Holkar of Indore

In the event of war breaking out I place my services and the resources of my State and my army at the disposal of my beloved King Emperor. Am convinced whole empire will rally round the King Emperor in defending the cause of justice and world peace.

The Maharaja of Kolhapur

In common with all people I have followed the troubled course of recent events in Europe with the closest attention and no small anxiety. The rare action of the British Prime

Minister inspired hope by its courageous initiative, but subsequent reports while not destroying all hope have caused grave disquiet. The time has come for me to offer unreservedly the entire resources, both economic and in man power, of my entire principality to Government in the event which God forbid, of Great Britain being forced by circumstances to take up arms.

The British Empire is the acknowledged leader of democracy, peace and freedom, and it is its unique role to reconcile and harmonise all those forces which can be made to contribute towards peaceful evolution and orderly progress. As such no thinking person can regard danger to Britain as anything but danger to India, the future of which as a union of progressive States under the Crown is linked up with the destiny of Britain.

Kolhapur, with its traditional loyalty of centuries to the British connection, and myself, as its ruler, assure Your Excellency on behalf of the State and all Marathas generally of our and their unflinching loyalty and devotion and unstinted support to the Empire in the eventuality of war which can only be for the Empire a struggle waged for the righteous and noble cause of securing peace based on justice and those rights of human liberty, freedom and progress which are being universally sought.

The Raja of Baria

His Highness Raja of Baria has asked to convey telegraphically to His Excellency the Viceroy his respectful assurance of wholehearted service and help should unfortunately a war break out in which His Majesty's Government were involved. This is in consonance with the invariable tradition of the Baria State, and His Highness, who served personally in the Great War and in the Afghan War in 1919, will deem it his duty and privilege to place the services of himself and his State at the disposal of his beloved King Emperor.

The Raja of Seraikela

I have been watching with deepest concern the grave developments in the international situation. I therefore place my personal services and the entire resources of my State at our beloved King Emperor's disposal in the event of a war. I shall be obliged if my humble and loyal offer is kindly communicated to proper quarters.

The Nawab of Cambay

Myself and the resources of my State are at the disposal of His Majesty the King Emperor, God forbid, in the event of the situation in Europe taking a serious turn.

The Nawab of Loharu

While the recent events in Europe are creating apprehensions of war amongst everybody in India and elsewhere, I would very much like to assure you of my full allegiance to His Imperial Majesty the King Emperor and whole-hearted support in the event of any war. Though my State and resources are far too small to be of any actual importance, I am personally ready to do all in my power with feelings of traditional devotion and loyalty in the cause of the British Empire. It will be a great honour if my personal services will be accepted since it is my earnest desire to serve in person. I also assure you that my family and all the subjects will also be found in readiness to serve whenever they are wanted.

I hope you would very kindly communicate the same to the Government of India for information.

With kindest regards.

The Nawab of Bahawalpur

I have been reading with much concern the disconcerting news of the troubles in Europe.

I do not know what may happen and let us pray that Allah will spare the world from further misery and unhappiness.

I feel it my bounden duty to my Lord and Sovereign to place my person, my Forces and all that I possess at His Imperial Majesty's disposal if it pleases His Majesty to accept an offer from a most devoted and humble well-wisher who is ever keen to do anything in the cause of loyal and devoted service to His Majesty's person and throne.

Allah bless and be ever the Protector of our most beloved Lord and Emperor.

I am writing this as a purely personal letter and sincerely hope to receive your sincere and friendly advice whether it is correct that this humble request be forwarded through the proper channel.

With my best salams.

The Nawab of Sachin

It is the proud heritage of the House of Sachin to live for the service of His Imperial Majesty the King Emperor. To humbly serve His Imperial Majesty with unflinching loyalty and devotion both in peace and war is a proud privilege inherited by me from my forbears, and in the unhappy event of war breaking out I beg to assure His Excellency that I and my subjects shall not spare the last drop of our blood for our beloved King Emperor. I hasten to place my sword and the entire resources of the Sachin State unreservedly at the august feet of His Imperial Majesty.

Unfortunately I have not been trained for the army like my father, but soldiering is in my blood; and I pray that this deficiency in my education shall not prevent His Imperial Majesty from permitting me to fight personally under his banners. My father was one of the first Princes of India to proceed in person to

the front in 1914 and I earnestly beg His Excellency not to deprive me of this privilege.

With my kindest regards.

The Nawab of Janjira

I cherish with unbounded pride the Government's letter of appreciation of what little services my revered father rendered during the Great War. Now that the war clouds are gathering in ever increasing density I solemnly declare and affirm my firm and unswerving loyalty to the Crown and my fixed and whole-hearted determination to emulate my revered father in case British Government gets involved in war.

The Raja of Jhabua

A perusal of the papers indicates a likely disturbance in Europe in the near future. It has been our tradition to remain implicitly loyal to the Crown as evidenced by our services during the mutiny and the Great War. This natural trait in my blood descended from generations is too powerful to permit me to stand by and be a looker-on. Hence I offer my humble services unreservedly to His Gracious Majesty my Emperor and conclude by fervently praying for the everlasting continuance of the beneficent British rule. Request kindly convey my offer by cablegram.

The Maharaja of Jind

As the Central European situation is still critical all the resources of my State and Army are at His Majesty's disposal, in the event of Britain getting involved in war.

The Raja of Suket

Should hostilities break out between Great Britain and any other power as an outcome of the present delicate world situation, I would not hesitate to place my person and all the resources of my State at the disposal and service of the Crown. Kindly convey my humble offer to His Excellency the Crown Representative.

The Maharaja of Idar

At this critical juncture, when in spite of the British Government's supreme and most noble efforts for the preservation of peace and harmony among nations war clouds in Europe are thickly gathering, I place all the resources of my State at the service of my beloved Emperor, should our Government find it necessary to resort to arms for upholding the cause of justice, law and order in the world. In doing so, I am only following the well known traditions of my house of deep devotion and loyalty to the person and throne of my Emperor.

The Maharaja of Rajpipla

His Highness Maharaja of Rajpipla has telegraphed to convey to His Excellency the Viceroy that resources of His State and His personal services are at the disposal of His Majesty.

The Raja of Khilchipur

Observing Press accounts of the European crisis I pray God to avert menace. Nevertheless in the eventuality of war, I place my personal services and the humble resources of my State at the disposal of the King Emperor and assure that the smallness of my resources will not yield in zeal to anyone in the service of the Empire. Kindly communicate my offer of services to His Excellency the Viceroy and His Majesty.

The Maharaja of Dewas (Senior Branch)

On the eve of the most menacing situation in Europe I hasten to assure Your Excellency of my personal devotion and the devotion of my State to His Imperial Majesty's Throne and Person. And as in the last Great War, all resources in my power will be unreservedly placed at the service of the Empire, should another such contingency unfortunately arise. I need hardly add that in case Great Britain is forced into war I am sure that the honour of my going to the front to fight for our beloved King Emperor will not be denied to me.

The Raja of Bansda

Ever since Bansda's connection with the British Crown its Rulers have shown unflinching loyalty and friendship and rendered all available assistance in emergencies like the last world war, and I shall only be too proud and happy in rendering similar service to His Majesty the King Emperor and the Empire in the hour of common peril. Your Excellency may kindly convey my deepest and sincerest assurances of personal loyalty and the loyalty of my State to His Majesty.

The Mehtar of Chitral

In view of the troubled condition of Europe, His Highness wishes to assure Government of his loyalty and places all the resources of the State and his own personal services at the disposal of Government.

The Maharawal of Banswara

Tense international situation must be causing much anxiety to His Majesty's Government. I am anxiously watching developments. In event of Britain being involved in war Your Excellency may assure His Majesty that my services and resources of my State are at His disposal.

The Nawab of Kurwai

In view of the critical European situation which might lead to a European war and in view of my pride in the historic loyalty of my House and my State to His Majesty, I hasten to offer to place my humble service and the resources of my State and my people at the disposal of His Majesty.

The Maharaja of Bijawar

Place my State's humble resources at Government's disposal. Kindly convey feelings of utmost loyalty to His Majesty.

The Maharaja of Ajaigarh

May Almighty forbid the world crisis but in the event of unfortunate happening I shall lag behind none in placing all available resources of my State at His Imperial Majesty's disposal. Kindly convey my most loyal and sincere assurance to His Majesty.

The Raja of Sailana

Most loyally and faithfully place at His Majesty's disposal all resources of my State in the event of war.

The Raja of Chhota-Udepur

In this moment of crisis prevailing in Europe I voluntarily place at the disposal of His Imperial Majesty my personal services and all the resources of my State.

The Raja of Sandur

Learn with deep concern European situation unfortunately verging towards war inspite of best efforts for peace. Wish to assure His Majesty through Your Excellency that in case of war my Army which rendered signal services to Lord Clive under my famous ancestor Murarao at the siege of Arcot, though infinitesimally reduced due to misfortune, is still at His Majesty's service. Also agreeable to rendering other possible assistance myself and my State capable of.

The Raja of Dhenkanal

I respectfully assure Your Excellency that in the event of a European war unfortunately breaks out I shall unreservedly place all the resources of my State at the disposal of the Crown.

The Raja of Sakti

In the event of war breaking out as the result of grave international situation I unreservedly place all resources of my State as well as my personal services at the disposal of our beloved King Emperor.

The Raja of Hindol

My personal services and the entire resources of my State are placed at the disposal of our beloved King Emperor in the event of war arising out of the grave European crisis. Please convey my assurance through proper channel.

The Maharajkumar of Bikaner

I returned from Europe today and seeing the very critical international situation I hasten to beg Your Highness in the event of war breaking out to be pleased to place through His Excellency the Viceroy my personal services and sword at the entire disposal of His Imperial Majesty, our beloved King Emperor.

The Raja of Pal Lahara and the Maharaja of Patna

The Raja of Pal Lahara and the Maharaja of Patna offer to place their personal services and the resources of their States at the disposal of His Majesty the King Emperor in the event of a war.

The Raja of Kalsia

In view of the critical European situation kindly convey to His Excellency the Viceroy sentiments of good-will and deep loyalty to the throne on behalf of myself and my people.

My services as well as the entire resources of my State are at the disposal of His Majesty the King Emperor.

The Nawab of Dujana

Kindly convey to His Excellency the Crown Representative my loyal offer of services and supply of recruits in case of war.

The Maharaja of Karauli

In view of the grave international situation and war clouds in Europe, I write to sincerely assure you that I and my subjects will remain whole-heartedly loyal to the British Government and that I am always prepared to carry out sincerely and enthusiastically whatever services I am deemed fit to perform in the event of war being declared by Great Britain.

Kindly bring this loyal and respectful offer of mine to the gracious notice of His Imperial Majesty the King Emperor and also to the kind notice of His Excellency the Viceroy.

The Maharaja of Datia

The critical situation in Europe is causing grave anxiety throughout the British Empire. If, God forbid, negotiations for peace are not successful and war breaks out it should be the duty of every citizen of India to serve his beloved King Emperor in every way he can. I beg most earnestly to offer my personal services and all the resources of my State and people to His Imperial Majesty. I did my little bit during the Great War and I assure His Excellency the Viceroy that I am always prepared to make my sacrifice for Britain's cause. My House has been second to none in loyalty and devotion to the Crown and I shall consider myself fortunate if I am of any service to the British Government.

The Raja of Dharampur

In view of the grave international situation, in which war threatens to break out in Europe, I feel it my duty and deem it a privilege to place myself and the resources of my State at the disposal of His Majesty the King Emperor in the service of the British Commonwealth of Nations.

The Raja of Kharsawan

I offer my services and the resources of my State at the disposal of His Majesty the King Emperor in the event of war.

The Raja of Sarila

The unsettled condition in Europe prompts me to offer the resources of my State and express feelings of loyalty to His Majesty.

The Raja of Baudh

I take the earliest opportunity of placing unreservedly at His Majesty's command my humble services and that of my subjects with the entire resources of Baudh State, and I would request you kindly to convey to His Imperial Majesty through His Excellency the Crown Representative that I and my subjects are ever prepared to stand by His Imperial Majesty whenever our humble services are required.

The Raja of Shahpura

I place myself with all the resources of my State at the disposal of the Imperial Government in the event of war. Please communicate this to His Majesty's Government.

The Raja of Maihar

In view of the growing tension in the international situation threatening an outbreak at any moment, I feel it my bounden duty to reaffirm on behalf of myself and the people of the State our unflinching loyalty and devotion to the King Emperor and place, in the event of a war involving the Emperor, my personal services and the resources of my State at the disposal of His Majesty. I shall be grateful if you kindly communicate the message to His Majesty.

The Rajas of Baramba and Raigarh

The Ruling Chiefs of Baramba and Raigarh inform His Excellency the Crown Representative that in the event of war they will place their services and the entire resources of their States at the disposal of His Majesty the King Emperor.

The Raja of Poonch.

Kindly convey to His Excellency the Crown Representative my most humble message that all my personal resources and those of my territory will be at the disposal of the Crown if war breaks out in any part of the world where British interests require interference.

During the Indian Mutiny of 1857 my father's uncle, Raja Jawahir Singh Sahib, and in the Afghan War of 1879, the Agrore War of 1888, and the Third Burma War my grandfather, Raja Moti Singh Sahib, offered their services and rendered them as far as possible.

In the Great War of 1914 by my father's untiring efforts and great influence about 18,000 men from Poonch joined the Indian Army

which approximately means that one out of every three men of the fighting age in the State enlisted for active service.

In this way he stood first amongst all the Indian Princes and Chiefs of this vast Empire.

Besides, Rs. 13,00,000, i.e., more than a year's income of his State he invested in the Indian War Loan, and about a lakh and a half were contributed by him towards different War Funds.

Please assure His Excellency that Poonch will maintain its tradition and previous record and will not remain behind any other State in rendering its share of sincere and loyal services to the Crown, in case of any such emergency.

The Nawab of Savanur

May I take this opportunity of placing my humble services at the disposal of His Majesty's army through you?

Though now I may not be as young as I was when I went on service to Mesopotamia, still I feel quite energetic enough to do all that may be required of me on service and if there is any chance for me I shall be grateful if you will recommend my name.

For your information may I mention that from the Deccan States I was the first one to go on service during the last war and Field Marshal Sir Arthur Berrett was kind enough to mention me in despatches, and after that I was the first Indian Officer to be appointed in His Excellency Lord Willingdon's Body Guard at Bombay.

I have served with the 9th Royal Deccan Horse and am still an Honorary Officer with the same regiment.

The Thakor Saheb of Rajkot

The Thakor Saheb of Rajkot has offered to place himself and the resources of his State at the disposal of His Majesty the King Emperor in the event of war and requests that this offer may kindly be conveyed to His Excellency the Crown Representative.

The Thakor of Jambughoda

I have been following very closely the recent developments leading to the present crisis in the international situation, and am watching with anxious concern the gathering of war clouds on the political horizon of Europe. But it is a matter of relief to note that as a result of the laudable efforts of His Majesty's Prime Minister in the cause of peace, war has been delayed and Germany has been led to the path of the settlement of the Sudeten problem by peaceful negotiation instead of by the bloody arbitrament of sword. The recent dramatic announcement regarding the convocation of the Four-Power Conference at Munich has eased the tension, but it looks that the World is not entirely out of the wood. For, as a result of the intransigence of Germany, the Four-Power Conference at Munich breaks up, and War ensues, and if Great Britain is compelled to fight on the larger issue of the preservation of the Democratic States against

uncalled for violence on the part of Totalitarian States, then, in that event, it shall be my proud privilege to place myself, my subjects and the entire resources of my State at the disposal of the Crown and British Government to be utilised by them in a manner they might deem fit.

In times of grave emergencies like the present, my House and my State have always given proofs of their loyalty and usefulness to the British Government. During the last Afghan War my revered father had placed the resources of the State at the disposal of Government and had also offered himself for active service. Similarly, after coming to Gadi I had the good fortune of rendering assistance to Government at the time of the Great War by sending several recruits to the War and by contributing liberally to the several war funds consistently with the resources of my State.

In making the present offer, I am only honouring the tradition of uniform loyalty and usefulness of my House and my State to the British Government, and I would therefore request you kindly to convey to His Excellency the Crown Representative this my humble message of loyalty and usefulness to the Crown and British Government in the present moment of world crisis, which is of great concern to them and all alike.

The Sheikh Saheb of Mangrol

In view of the apprehended grave international situation and the British Government being dragged into the orbit of war I take this opportunity of offering all my humble resources and placing them at the command of His Imperial Majesty.

The Rani Regent of Mudhol

I join with you in the hope that the cause of anxiety would be removed by peaceful methods, but if unfortunately they fail and involve the British Government in war, I need hardly assure you that the small resources of my State will be at the disposal of His Imperial Majesty to whose throne and august person my House has always been loyal.

The President, Council of Regency, Nabha.

On behalf of His Highness the minor Maharaja, the Durbar, and the people of the State, the Council of Regency give expression to their deep sense of devotion and loyalty to the British Government and to His Majesty the King Emperor. They place all their resources at the disposal of the British Government and beg to assure His Excellency the Viceroy and His Majesty the King Emperor that they will be second to none in serving the cause of the British Empire with men, money and materials.

The Nawab of Bhopal.

You are no doubt aware of the offers of services made by several States in connection with the crisis in Europe, which has, during the past few weeks, threatened the peace of the world, and which still continues to cause

grave anxiety. I have so far refrained from formally making a similar offer to the King Emperor, chiefly because I have felt that it was premature to do so and that in the case of Indian Princes, assurances of this nature were not called for. The relationship of the Princes with the Crown and their traditional loyalty to the person and throne of the King Emperor along with their past record of services should leave no room for any doubt in any quarter as to the attitude of the States in time of war in which Great Britain may be involved.

In view, however, of the action already taken by several States I feel I must at least write and tell you that when the zero hour arrives, the entire resources of my State and my own humble services will be placed unreservedly at the disposal of His Imperial Majesty, and I shall consider it a great privilege if they are made full use of, for what they may be worth, in any part of the world where Great Britain may need them.

I still hope and pray that good sense will prevail, and that the noble efforts of the Prime Minister in the cause of peace will triumph, and British diplomacy will in the end succeed in averting a world wide conflagration. But should the worse happen we in Bhopal are ready with our entire resources, however insignificant they may be, to bear more than our full share of the burden, and to maintain unimpaired our traditional record of loyal friendship and faithful co-operation with the British Crown.

The Raja of Samthar

I heartily wish and hope that the laudable negotiations of our Premier even now will succeed in scattering away the gathering clouds of war which will be nothing short of a world wide catastrophe as the international situation stands. However, if no understanding is reached and should a war be declared in which Great Britain has to be a party, I place unreservedly all the resources of my State at the disposal of His Imperial Majesty.

The Raja of Nagod

I place the services of my army, nobles and subjects with the entire resources of the State at the disposal of His Majesty the King Emperor to be utilised by him in case war breaks out.

The Raja of Nalagarh

My entire State resources and population are at the Crown's disposal at this hour of intense war danger.

The Thakor of Rataumal

In view of the threatening situation in the international politics of the European Powers, and looking to the immediate danger of the outbreak of war, I beg to place the resources of my State in men and money at the disposal of the British Government.

My Kamdar, Mr. S. K. Chandra, who was an Honorary District Assistant Recruiting Officer at Bara Banki during the Great War and as such supplied a number of combatants and non-combatants, also places his services at the disposal of the British Government for recruitment work.

The newspapers show that there is a possibility of a war taking place and as it has been the distinguished mark of my predecessors to sacrifice their lives for the cause of the King Emperor, I too have a desire not to be deprived of this glory. I assure His Excellency the Viceroy and the Governor through your goodness that if, God forbid, this great war takes place and our British Government also takes part in it, then I from now offer myself, wealth subjects and army and it would be a pride for me to sacrifice the last drop of my blood for our King Emperor. I hope that this insignificant sacrifice of mine will be accepted.

The Rana of Jobat

This is perhaps the most critical period in the history of the world. The British Empire may within the next few days be involved in the greatest and the most destructive war the world has ever seen.

In case of war, as a loyal subject of His Majesty I offer to place my personal services, and the entire resources of my small State at the disposal of the Imperial Government to make use of in any way it thinks meet and proper.

The Nawab of Balasinor

Please convey to His Excellency the Viceroy my heartiest congratulations for securing peace. Also kindly assure on my behalf my services and State resources at His Majesty's disposal in time of War.

The Regent Rani of Gangpur

I have the honour to say that the Regent Rani Sahiba of Gangpur has asked me to convey to His Excellency the Crown Representative her offer to place the entire resources of the Gangpur State at his disposal in the event of war.

Better Fruits and Eggs

(Continued from Page 177.)

F. P. Mechanical grading experiments were conducted in peaches and plums at Tarnab Farm for three months, but on account of the unsuitability of the machine, hand grading had to be resorted to.

Experiments carried out in these grading stations have shown the doubtful superiority of mechanical grading to hand grading. Apart from the fact that the accidental error in selecting different sizes is somewhat greater in the case of hand grading this system appears to be more generally suitable for Indian conditions and fruits. Although the Agricultural Marketing Adviser with the Government of India proposes to continue further experiments on mechanical grading, yet the opinion is held that it would be better in future to increase the number of hand grading experimental stations.

ON THE HEIGHTS OF SIKKIM

DANGERS THAT AWAIT SURVEYORS

For the first time a regular survey is being undertaken of Sikkim.

Some criticisms have of late been made of the existing map of Sikkim on the scale of a quarter of an inch to a mile because of its omissions and inaccuracies; but what many do not realize is that this map is not based on regular surveys of the country, as such surveys have never been made before, but is compiled from rough reconnaissance surveys laying no claim to precision and the maps of certain high mountain areas made by private expeditions.

The new survey will be on the scale of half an inch to a mile, and will be carried out next year, after the present programme of triangulation has been completed and computed. Even after completion of the detailed survey, some months must be allowed for publication. It is not likely, therefore, that the new maps will be available to the public for another couple of years.

On September 12, last a military officer of the Survey of India engaged on the triangulation of Sikkim was struck by lightning while camped at Endong peak at about 12,000 feet above sea level. The accident occurred at about 2-0 A.M. The lightning set fire to the officer's sleeping bag, and his left arm was severely burnt before he could be rescued by another officer in the same camp with the help of their *khalasis*. The injured officer was removed to hospital in Darjeeling and is progressing favourably.

This accident, which is by no means without precedent in the history of the Survey of India, shows what dangers the observers on high mountains, especially at a season of the year when thunderstorms are frequent, have to face. The work of the triangulator is to fix by theodolite observation the positions and heights of points such as sharply defined peaks, prominent trees and the like.

On these fixed points the detailed survey of the area which is carried out later is based. To do this work he must set up his theodolite at stations commanding extensive views in all directions. The highest peaks are often the most suitable places for stations, and in a country such as Sikkim to reach them sometimes involves considerable feats of mountaineering. The officer who was struck by lightning was accompanied by Sherpa porters specially selected for their previous experience with expeditions in high mountains.

Unlike the ordinary mountaineer who seldom remains for long on the summit of a peak, the triangulator has several hours' work to do after arrival, and should the weather be cloudy he may have to camp on the peak for days at a time, close to his station so as to be able to take advantage at once of clear intervals. During thunderstorms the summits of peaks attract lightning and the danger to the observer, camped perhaps a few yards from the highest point, will be obvious.

ONE HUNDRED YEARS OF LEGISLATION

REFORMS ACCOUNT FOR 5,000 AMENDMENTS

In a revised edition of the Unrepealed Central Acts, the Government of India have brought the laws of India enacted over a period of over 100 years up to date.

The last occasion when such a revision was undertaken was in 1928. The volume of amending and supplementary legislation since then has been considerable. In addition, an enormous number of changes were made in the Indian Statute Book by the two Orders in Council under section 293 of the Government of India Act, 1935, passed with a view to bringing Indian laws into line with the provisions of the new Constitution, particularly those which reconstituted, under different names, governments and authorities in India and prescribed the distribution of legislative and executive powers between the Federation and the provinces.

The magnitude of the task may be appreciated when it is realised that, on a rough estimate, the total number of individual amendments made by the Adaptation of Indian Laws Order was well over 5,000. The First Schedule of the Order giving in terse language the specific amendments to be made covered as many as 110 closely printed pages, while General Clauses in the body of the Order were responsible for a large number of verbal amendments.

Scope Widened

The new edition covers a far wider scope than the old; it is a comprehensive record of all legislation at present in force.

Most of the Acts of local application, hitherto published only in the provincial compilations, most of the Private Acts not published anywhere, and the three Codes, have all been included. The only omissions are a few obsolete enactments and the Acts relating to Burma which have not been formally repealed, certain purely amending Acts, the provisions of which have already been incorporated in the principal Acts, and sixteen Acts relating to provincial land revenue, rent and tenancy.

Brought Up-To-Date

The edition has been brought up to January 1, 1938, and takes into account the repeals made in the beginning of this year by the Repealing Act of 1938 and the Insurance Act of 1938.

A chronological table and an index are provided at the end of each volume, giving the short titles of the Unrepealed Acts of the period covered. The last volume concludes with a consolidated index to the titles of Acts. The changes made in the original Acts by later legislation are fully indicated in the text and the footnotes contain references to Gazette Notifications regarding the commencement, extension and application of enactments, important Statutory Rules and Orders both provincial and Central and other useful matters.

This edition of 9 volumes of over 5,000 pages in all is therefore an up to date, comprehensive, and authoritative compilation. The first two volumes, covering Acts of 1834—1871 and 1872—1881 respectively, have already been published. The third and fourth volumes, 1882—1897 and 1898—1907, are expected shortly. The remaining five volumes are in the press and will be available one by one before the end of the year.

Considering the labour involved and the wealth and thoroughness of the legal information provided, the volumes are modestly priced at Rs. 3/4 each and can be had of the Manager of Publications, Delhi, Superintendents of provincial Government Presses and of all agents for the Government of India publications.

GUJARAT RAJPUTANA

MINERAL POSSIBILITIES

Discovery is reported, as a result of the investigations made by the Geological Survey of India, of several occurrences of building materials of considerable interest and ore-bodies of varying possibilities in Gujarat and Southern Rajputana.

The area covered by the investigations includes in its northern portion the southernmost States of the Rajputana Agency, Dungarpur, Banswara and Kushalgarh in their entirety and Partabgarh in part. Extending southwards, it covers the eastern tracts of the Mahikantha and Sabarkantha States and Lunavada, Sunth, Sanjeli, Kadana and Balasinor States of the Rewakantha Agency. Further south, it stretches across the Panch Mahals district and the eastern fringes of Ahmedabad and Kaira districts of the Bombay Presidency into the Rewakantha States of Bariya and Chhota Udepur. Part of the eastern margin of Baroda State, together with numerous small feudatory States of the Rewakantha States Agency, lying north of the Narbada river, forms the southern limit of the area, while the western border is fringed by the fertile alluvial plains of Gujarat, and the western margin of the great Malwa plateau flanks it on the east.

Marble

Generally, the Aravalli limestones of the area are too much broken and ramified with secondary siliceous veins to be of any use as building stone. Thick bands of crystalline limestone, containing small patches of white and tinged marbles, have been found at the northern frontier of Jambughoda, while slabby calcareous bands quite suitable for building purposes, occur in the infra-trappeans of Alirajpur, Jhabua, Lunavada and smaller Mahikantha States. The sandy bands in the infra-trappeans are often excavated for building purposes as well as for manufacturing grinding stones.

Extensive occurrences of slates have been seen in the argillaceous metamorphics of the Aravalli system. The most noteworthy ones are in the Thalod taluka of the Panch Mahals district, which yield slabs of varying sizes in abundance.

Fire clay has been found near Derol railway station in the Panch Mahals district in association with the infra-trappean sandstones. The clay is refractory at 1400°C. and does not shrink on firing.

Near Taibpur in the Kapadvanj taluka of Kaira district, a rich deposit has been found of bauxite in association with the Ahmednagar sandstones, while near Khandia in Bhamria State in the Aravalli phyllites and schists, there has been discovered a deposit of galena.

Manganese: Iron: Silver

The galena ore-body occurs in irregular, thin veins and stringer intimately associated with quartz veins intruding into the schists. A specimen of the quartz-galena lode, assayed in the Geological Survey of India Laboratory gave 18.16 oz. of silver per ton.

Small deposits of iron ores have been found in Jambughoda State in the hematite-quartzite hills about 1½ miles southwest of Jambughoda. Specular iron ores occur sparsely in association with phyllite and quartzite around Jambughoda.

Two new occurrences of manganese ores have been recorded in Jhabua State and the Panch Mahals district. In the Jhabua occurrence massive psilomelane forms bulk of the ore. Crystalline aggregates of braunite, hollandite with rhodonite and piedmontite also abound. The new deposit in the Panch Mahals lies about three miles north of the railway station Anas of the B. B. C. I. Ry. The ore consists of pyrolusite, psilomelane and wad.

METEOROLOGY OF PRACTICAL VALUE?

With the rapid growth of civil aviation in India and the introduction of the Empire Air Mail scheme, the work of the Meteorological Department has been assuming ever-increasing importance. For successful and safe flight, the air pilot depends upon atmospheric conditions.

The Meteorological Department gives this valuable aid regularly to aviators in India from Quetta, Karachi, Calcutta and Poona observatories. Quetta with Peshawar caters primarily for the Royal Air Force. Quetta station, in addition to this, forecasts weather in Sindh, Baluchistan, the Punjab and locally for Karachi. Peshawar works on much the same lines as Quetta.

From Karachi the aviator obtains weather forecasts not only for the important air route extending from Bahrein to Allahabad, but also for the feeder Karachi-Lahore route and the Karachi-Ahmedabad portion of the Karachi-Madras route. Pilots frequent the office at Karachi to consult charts and to discuss the weather with the officers personally for these routes as well as others in the area for which it is responsible.

At Agra Observatory the principal work is to equip balloon station on air routes. With the introduction of night-flying on the Empire air routes, however, standardization, purchase and installation of equipment for the determination of visibility and cloud height at night has been acquiring increasing importance.

If an aviator is much concerned with Meteorology so is the seaman and farmer. They all in common regulate their daily tasks by weather conditions. For them these forecasts are not academic. They know that their safety or their prosperity depends largely on accurate weather forecasts. This forecasting is one of the services rendered unobtrusively by the Meteorological Department of the Government of India from its various centres.

Observatories at Work

The head office of the Department is in Poona. From this observatory, is flashed guidance to the mariner on Arabian Sea or to the aviator skimming through the skies across the peninsula. To both the service is invaluable and essential.

These reports issued at regular and frequent intervals are part of the ordinary duty of the Poona station. It issues warning to individual interests about heavy rainfall, and low temperature, for the whole country excepting nearest India, Burma and Sind.

The Calcutta Observatory concentrates on the issue of storm warnings for the Bay of Bengal, heavy rainfall warnings for north-east India and the surrounding areas, squall warnings for Bengal, and the issue of weather reports and forecasts to aviators flying in north-east India, or on the Allahabad-Victoria Point route.

The Colaba (Bombay) Observatory also broadcasts the principal features of the weather over Western India, but the information supplied is based wholly on the material received from Poona.

Scientific Research Work

Apart from the forecasts of the weather, the Meteorological Department in its various centres is also carrying on highly skilled, scientific research work of far-reaching consequences. These studies have yielded interesting results; for instance, at the Alibagh Magnetic Observatory, Bombay, continuous records of the various magnetic elements are obtained and observations of the absolute values of these elements made.

Data regarding the magnetic character of the days and the daily range of variations of magnetic elements are supplied regularly to the Royal Meteorological Institute, De Bilt, and the Solar Physics Observatory, Kodaikanal. Another important and regular work at Colaba is the registration and measurement of atmospheric potential gradient. The observatory at Agra has also an important research side. It prepares monthly means of upper winds, and data of seismic observations, of sounding balloon and of daily pilot balloon. Poona's marine section co-ordinates the collection, examination and study of ships' weather logs. The station issues instructions for the determination of visibility and cloud height at night.

Any item in the INDIAN INFORMATION SERIES may be reproduced without acknowledgment.

Indian Information Series

Vol. III

New Delhi, December 1, 1938

No. 19

CONTENTS

	Page		Page
Anti T. B. Fund's Final Drive	157	How To Get To The Hedjaz	177
Bad Marketing Methods	159	On The Frontier	180
Mineral Output Increased	161	Drug Control In India	181
Income-tax Amendment Bill	163	Milk Recording Societies	160
India At Toronto Exhibition	168	Viceroy's Tour	158
Practical Zoology	169	Training In Librarianship	158
Medical Schools Conference	171	In Memory Of Kemal Attaturk	160
India's New Museum	173	Anti-T. B. Fund Subscriptions	182
No Partition Of Palestine	175	Impure Milk Products	184

YOUR LAST CHANCE

Anti-T. B. Fund's Final Drive

LADY LINLITHGOW PLANS PERMANENT ORGANISATION

Share Of Provinces And States

With the return to India of the Marchioness of Linlithgow fresh impetus has been given to the appeal for the King-Emperor's Anti-Tuberculosis Fund, the campaign for which has been actively pursued throughout the country during her absence. A final drive for funds is now announced, with a view to closing the appeal by the end of December, and plans are about to be formulated for the application of the Fund on the Central and Provincial basis originally outlined when the all-India project was launched.

The appeal has been before the Indian people for almost a year, and while the result so far is regarded with satisfaction it is claimed that further contributions will materially enhance the stability of the Central and Provincial associations about to be established. More than Rs. 60 lakhs have been subscribed but between now and the end of the year a final drive is being made to secure additional donations, in order that the Central and Provincial associations may be able to begin their fight against tuberculosis with such financial support as will enable them to tackle the work that is contemplated.

Indian opinion generally has shown wide and generous sympathy towards the project which Her Excellency the Marchioness of Linlithgow has sponsored, and Her Excellency now proposes to bring the scheme to practical fruition. Hitherto the Central work in connexion with the Fund has been carried out by an informal Advisory Committee, which has been mainly concerned with the collecting of money. Her Excellency now intends to give a legal and con-

stitutional basis to the Fund, with a view to ensuring that its expenditure will be along lines in harmony with the purposes for which the money has been obtained.

Proposals for applying the Fund will include the creation of a Central Association at the Headquarters of the Government of India, supported by Provincial and possibly State associations, which will apply a uniform policy in the different localities in which tuberculosis prevails. It will be recalled that Her Excellency, in appealing for funds, indicated that the Provincial share of the Fund, consisting of 95 per cent. of the money collected in the Provinces and not earmarked for the Centre, would be made over to the Provincial Tuberculosis Associations as soon as they had been formed. This scheme will be carried out under the arrangements contemplated for the formation of the Central and Provincial organizations, which are intended to provide adequately and effectively for the purposes for which the Fund was inaugurated.

Centre To Help Provinces

It was also proposed that the existing King George V Thanksgiving (Anti-Tuberculosis) Fund would be merged with the Central organization of the new Fund, which will be administered by an authoritative, representative, and scientifically equipped Central body. The essential purpose of the Central committee will be to help and reinforce the work of the Provincial associations in fighting tuberculosis. A qualified technical expert, with a thorough knowledge of Indian conditions, will be associated with the Central body, and his knowledge and guidance will be at the disposal of the Provincial organizations.

It is anticipated that with its inauguration the Central Establishment will be headed by Her Excellency as President and will contain representatives of the affiliated Provincial and State associations. This broad-based and legalised organization will thus be influenced by expert guidance amenable to Provincial opinion. It is expected that the expenditure of the Fund in the Provinces and States will be mainly in the provision of clinics, and, where possible of sanatoria and after-care settlements. The expenditure at headquarters will be on research, liaison with the Provincial and State associations, the provision of technical advice, and the development of a model clinic at Delhi.

The arrangements now being made for the legal establishment of the Fund include the merging of the King George V Fund with the new Central association and the preparation of constitutions for the new Central, Provincial, and State associations. Provincial Governors and Rulers of States have been approached with a view to securing Provincial and State collaboration in establishing the new associations. The opinion of the Provinces and States will have the fullest weight in the preparation of the constitutions for the various organizations. The general policy originally outlined by Her Excellency appears to have commended itself to the public, and it is now her intention to implement the proposals at the earliest possible date after the closing of the appeal.

NOTE:—The latest subscription lists are given on page 182.

TRAINING IN LIBRARIANSHIP

IMPERIAL LIBRARY CLASS

A course of training in librarianship, which will last for not less than six months, will be started in the Imperial Library, Calcutta, from April 1, 1939, and will cover: Classification, Cataloguing, Book Selection and Reference Work, Library Routine and Organisation, Bibliography and Library Handwriting.

An examination will be held at the end of the course; successful candidates will be awarded a Diploma (Pass or Distinction).

Admission will be open to persons from all over India, including the Indian States. The class will, however, be restricted to twenty students only. It will not be possible, therefore, to give consideration to applications received after January 31, 1939.

The minimum qualification for admission to the class will be a University degree. Some concession will, however, be made for those working in libraries, but they must possess at least an Intermediate Certificate. The fee for the entire course of training will be Rs. 75, payable in advance.

Classes for training in librarianship are held in the Library every alternate year. The first class was held in 1935 and the second in 1937.

VICEROY'S TOUR

ACCOMPANIED BY LADY LINLITHGOW

Their Excellencies the Viceroy and the Marchioness of Linlithgow, accompanied by the Lady Anne Hope, the Lady Joan Hope, the Lady Doreen Hope, and their personal staff will, on conclusion of their visit to Bhikna Thori on the Nepal Border, and Darbhanga, arrive in Calcutta on December 13, where they will remain till January 4, 1939. Thereafter, Their Excellencies and party leave for their Southern India tour during the course of which they will visit Ernakulam (Cochin State), Trivandrum (Travancore State), Bangalore, Mysore, Kolhapur, Bombay and Baroda, returning to New Delhi on January 30, 1939.

VICEROY'S OFFICIAL VISIT TO BOMBAY

Their Excellencies, the Viceroy and the Marchioness of Linlithgow, accompanied by their daughters, will pay an official visit to Bombay, arriving at Victoria Terminus by special train on January 20th, 1939; the arrival will be public.

They will drive through the streets of Bombay in state, and will proceed to Government House, Malabar Point, where they will be the guests of His Excellency the Governor and Lady Lumley for the period of their stay.

Their Excellencies will attend the Races in state on January 21st, and will see the race for the Linlithgow Cup which His Excellency the Viceroy has presented to the Royal Western India Turf Club Ltd., for a race for Class I and II horses.

Their Excellencies have expressed a wish to do some entertaining themselves during their stay in Bombay, and His Excellency the Governor has placed Government House at their disposal for this purpose. Two official dinners, and a Garden Party will be given by Their Excellencies, who will also carry out a number of other engagements.

Their Excellencies' calling book will be opened in the Secretariat and at the Government House Lower Gate on Tuesday, January 10th. They will leave Bombay on January 26th.

OVER FIFTY LAKHS LOST ANNUALLY BY BAD MARKETING METHODS

TOO MANY "CURATE'S EGGS"

Agricultural Marketing Adviser's Practical Report

More than half a crore of rupees are lost to India every year through wrong methods of collection, transport and marketing of eggs, says a report by the Government of India's Agricultural Marketing Adviser.

Yet India contains 10 per cent. of the world's poultry and, with Burma, more than one-fifth of all the ducks in the world. An annual income of Rs. 6,00,00,000 could be earned by village producers by proper management of the egg trade in India.

Appalling waste of all kinds handicaps the industry at present. Fifteen lakhs of rupees are lost by mislaying of eggs or by allowing them to be taken away by crows, kites, rats and other pests. Breakage in transit, due largely to the use of faulty containers, accounts for losses of at least another Rs. 15,00,000. But most serious of all, though partly due to lack of cold storage facilities, is the slow rate of distribution which is responsible for the loss due to the eggs becoming stale. It is not widely enough realised how fatal it is to expose eggs for too long in this country, where the temperature is above the incubation point during certain times of the day.

Speedy Collection: Better Prices

At present too long a period elapses after the egg is laid before it reaches the consumer. Time is wasted in the producing areas in collecting and assembling the village eggs for despatch to more distant markets. The report shows that the system of assembling small lots in country markets is not suitable for eggs. As a first step, village collectors should be properly organised so that every village is visited daily and the eggs assembled at suitable centres, fresh and ready for packing and immediate dispatch. The report notes over 150 centres where anything from 3,000 to half a lakh of eggs are obtainable daily. It gives illuminating details of the operations of a Co-operative Association of Village Egg Collectors in the North West Frontier Province. This Association has already handled over fifty lakhs of eggs with considerable benefit not only to the collectors but to the producers in that area who have gained through higher prices by at least 15 per cent.

This is but one way of getting better prices for producers; the report indicates several others of which grading is the most important. Facts and figures are given of commercial experiments showing that it pays those in the producing areas to sort out all defective eggs and send to distant markets only clean, good, fresh eggs graded according to standard sizes and marked with the AGMARK as prescribed in the rules made under the Agricultural Produce (Grading and Marking) Act.

Six experimental grading and marking stations have been running at Peshawar, Quilon, Delhi, Bombay, Lucknow and Rampur, some of them for more than a year. Their experience shows that, whatever may be stated to the contrary, buyers in this country are in fact prepared to pay better prices for better quality, and that graded eggs can be sold at a 20 per cent. premium over ungraded. It is suggested that the successful work done at these few centres should be rapidly extended to other parts of the country so as to secure better returns for the large body of village producers.

The relatively small share which the producer gets of the consumer's price is because the cost of distribution is very high. There are several good reasons for this and the responsibility does not lie entirely with the middlemen.

Apart from the losses due to staling and other factors already referred to, price risks are unduly high owing to the large fluctuations which occur in prices. The market price one day may be 10 or 12 per cent. up or down on that of the previous day owing to variations in the amount of daily arrivals. This risk is naturally thrown back by the buyer on to the producer, who also suffers from the seasonal depression in prices which is normally about 20 per cent. in the early months of the year when supplies are at their greatest.

In the United States of America at least 15 per cent. of the annual supply of eggs is put in cold store during the glut season and released later when prices are higher. If cold storage facilities were available, long period storage of eggs could also be profitable with the present range of prices in this country. It is obvious that cold stores could be useful for holding over excessive day to day supplies and so doing away with the large variation which occurs in daily prices. It would be necessary, however, for the owners of cold stores to undertake educative propaganda to ensure that they were adequately used. Although the provision of cold transport facilities to prevent staling in the course of transit would be desirable, it is unfortunately true that senders will have to be educated in the use of them.

Market Can Expand

The report indicates that the quantity of eggs sold on the internal and the export markets is capable of expansion. Previously the export trade was worth about Rs. 12,00,000 per annum, but has now shrunk to a quarter of this sum, due largely to adverse measures overseas, especially Ceylon. Certain areas, notably Travancore, Cochin and Bengal, depend on an export trade. Circumstances seem to be particularly favourable in these areas for producing liquid and frozen eggs. The industrial use of egg yolk and albumen in various forms is expanding rapidly and there seems no reason why India should not capture part of the growing market at present largely monopolised by China.

Boiled eggs form an important part of Indian cooking and there is already a small trade in them. This appears capable of development and may help to reduce loss through staling, particularly in the hot weather. It is suggested that attempts in this direction might be made in, say, the North West Frontier Province and other suitable important areas for supplying the internal markets.

Some Useful Hints

The report is full of practical suggestions and recommendations. It shows that by the use of better containers losses can be reduced by at least 5 per cent. In spite of the millions of ducks in this country little has been done to improve their egg output by proper selection and breeding.

Experiments on *desi* poultry prove that their productive capacity can be increased considerably in a short time by proper selection and feeding. More work on these lines by the appropriate departments and public institutions is needed. Improved conditions in regard to the poultry houses and runs is of fundamental importance in improving the quality of the poultry and a matter well worth the attention of those interested in village welfare and rural reconstruction.

It is suggested that in future the importance of the industry should be officially recognised and statistics should be collected regarding the poultry population, egg production, prices and market supplies, so that information might be readily available to producers and others concerned.

An expanding market would mean an increase in hens and ducks. In order that the poultry population can be multiplied sufficiently quickly in appropriate areas, the artificial hatching and rearing used in other countries would require to be developed in India.

The report covers Burma as well as India and it is interesting to observe that so far as artificial hatching is concerned Burma is a long way ahead of India and has developed a considerable internal trade not only in eggs for hatching but also in day-old ducklings which are hawked through the village.

This essentially practical report is profusely illustrated with photographs, maps and diagrams, which would put money into the pockets of those in the poultry trade who care to study them.

INDIAN DAIRY INDUSTRY

MILK RECORDING SOCIETIES

For the development of high milk yielding strains of important breeds of Indian cattle, the question of forming milk recording societies, has been under consideration of the Imperial Council of Agricultural Research for some time. The necessity for the establishment of a system of milk records has also been emphasised by Dr. Wright.

Although the subject is one which should develop provincially, the Advisory Board of the Council consider that the Council should take the initiative and have accordingly recommended that:—

- (a) Work should be started, to begin with, in the home districts of the eight breeds for which herd books are being established by the Council;
- (b) Milk recorders should be appointed in each of the selected areas to visit all recording centres and check the results;
- (c) The constitution of the societies should be left to the provinces; and
- (d) Half the cost should be borne by the Imperial Council of Agricultural Research for a limited period.

These recommendations have been accepted by the Council and enquiries have been made from the provincial Governments concerned whether they agree to the proposals.

It would also greatly facilitate the improvement of the Indian dairy industry, if a uniform system of milk recording were adopted for dairy herds throughout the country. Such records of performances of milch cattle are also likely to be useful in their proper marketing. At present such information is not available. With this object in view draft forms for milk recording were prepared, but the Standing Dairy Committee decided in 1935 that before adopting these forms, their suitability for general use should be tested by practical trial on farms in various parts of India.

Accordingly the forms which provide for detailed information regarding the pedigree, record of weight from birth to maturity, diseases, movements, monthly milk yield, dates of calving, lactations and live weight, were circulated to provincial Governments and private dairies. The reports received show that, while the forms are generally suitable, their utility can be enhanced by minor modifications, which will be considered by the Dairying Committee.

IN MEMORY OF KEMAL ATTATURK

By His Majesty's command flags were flown at half-mast on Government Buildings and at flag stations on November 21, in India and throughout the United Kingdom for the funeral of Kemal Attaturk, late President of the Turkish Republic.

INDIA INCREASES MINERAL OUTPUT

Bigger Demand For Coal

WOMEN WORKERS UNDERGROUND PROHIBITED

Fewer Accidents : Death Rate Down

Increases in the output of coal, in the number of persons employed in coal mining, coupled with a general increase towards the end of the year in the wages paid to miners in all the coalfields, and a considerable improvement in prices for coal, are amongst the facts noted in the Annual Report of the Chief Inspector of Mines in India, just published.

The coal output in 1937 was about 22,500,000 tons of a declared value of about Rs. 7,00,00,000 representing, as compared with 1936, an increase in the output of about 1,750,000 tons or 8.51 per cent and an increase in value of about Rs. 1,50,00,000, or 24.82 per cent.

The output of coal in the various provinces in British India was:—

	Tons
Assam	243,650
Baluchistan	10,624
Bengal	6,527,820
Bihar	13,835,516
Central Provinces	1,504,159
Orissa	47,127
Punjab	166,632
Total	22,335,528

There were increases of output in the Jharia, Bokaro, Karanpura and Assam coalfields, and slight decreases in the Raniganj, Giridih, and Pench Valley coalfields.

The average output of coal per person employed was:

Tons Of Coal Per Person Employed

	Underground And In Open Workings	Above And Below Ground
British India.	189	131
Bengal and Bihar.	192	132
Assam	169	117
Baluchistan	42	41
Central Provinces	175	126
Orissa	198	146
Punjab	110	69

There was a general increase in the average output of coal per person employed except in Baluchistan and Orissa. In comparing the figures with similar figures in other countries it should be remembered that both men and women were till lately employed in Indian coal mines. In 1936, the output of coal per person employed above and below ground in the United Kingdom was 298 tons. In the same year, comparative figures in certain other countries

were Japan 207 tons; France 210 tons; Germany 311 tons, and the United States of America 671 tons.

Despatches of coal during the year amounted to about 20,000,000 tons, an increase of about 1,750,000 tons over the figure of the preceding year. In addition, about 1,200,000 tons or 5.8 per cent. of the raisings were consumed on the collieries themselves. The quantity of coal used for coking was about 1,300,000 tons, and nearly 840,000 tons of soft coke and 95,000 tons of hard coke were made.

The amount of coal exported during the year was over 1,800,000 tons as compared with 1,700,000 tons in 1936.

The demand for coal was good throughout the year. From April until the end of the year prices increased, while the supply of coal could not meet the demand. Enquiries from overseas could not be met and the outlook until December was excellent, when the market was slightly weaker but with the forward commitments made at favourable prices for most classes of coal. The contract for the Ceylon Government Railway was retained by the Indian coal owners.

Coal Cutting Machines

Increasing use is being made in the coal mines of electricity and coal-cutting machines, due partly to the increased price of coal and partly to the shortage of labour in mines. Coal-cutting machines were re-introduced during the year in some of the mines from which they were withdrawn during the depression; 140 machines, all worked by electricity were in use in 50 mines. There has been a considerable increase in the output obtained in many mines from the use of machines.

Though the number of coal mines using electrical energy remained the same as before, namely, 124, the aggregate horse power employed in coal mines increased from 84,168 to 86,804, or by 3.1 per cent; this is due to the increased horse power of motors installed chiefly in the Jharia, Raniganj and Central Provinces coalfields.

The increase in the output of coal was accompanied by an increase in the output of manganese ore. Thus nearly 800,000 tons of manganese ore, valued at over Rs. 12,00,00,000, were produced in 1937, as compared with nearly 625,000 tons, valued at about Rs. 50,00,000 in 1936. The output of iron-ore also similarly increased from nearly 1,400,000 tons, valued at about Rs. 28,00,000 in 1936 to about 1,600,000 tons, valued at over Rs. 27,00,000 in 1937.

What Of The Workers?

In British India alone, the daily average number of persons employed in all classes of mines was 267,858, a decrease of 1,735 persons on the previous year. Of these, 122,807 worked underground, 72,747 in open workings and 72,304 on the surface. The numbers of men and women who worked underground, in open workings and on the surface were as follows:—

	MEN	WOMEN
Underground . . .	118,920	3,887
In open workings. . .	48,268	24,479
Surface . . .	52,387	19,917
Total . . .	219,575	48,283

The number of women employed underground was 3,887 or 3.17 per cent. of the total number of men and women employed underground. The percentage of women employed underground in coal-mines was 3.79 as compared with 6.87 per cent. in 1936, 8.99 per cent. in 1935, 10.94 per cent. in 1934 and 13.14 per cent. in 1933.

The provincial distribution of the women who worked underground was as follows:—

PROVINCE	COAL	SALT	TOTAL
Bengal . . .	1,352	..	1,352
Bihar . . .	2,185	..	2,185
Central Provinces . .	335	..	335
Orissa . . .	..	..	..
Punjab . . .	..	15	15
Total . . .	3,872	15	3,887

But 7,301 women worked underground in 1936.

The daily average number of persons employed in coal mines was 171,149, i.e., 8,232 more than in 1936.

No More Women Below

From October 1, the employment of women underground was prohibited.

There was agitation by the Labour Associations in the two major coalfields for higher rates in view of the exclusion of women from underground workings. Increased rates of two to three annas per tub, according to the capacity of the tub, were given at most collieries. There were no demonstrations on October 1, when women were excluded from the mines. In a few isolated cases small batches of miners refused to go down the mine because they could not take their women.

About a fortnight after the prohibition of female labour from underground, there was a partial strike at a large colliery in the Jharia coalfield employing about 3,000 workers daily. About 300 underground workers stopped work until their rates had been increased. Other workers at the mine became affected. After three or four days increased rates were given and normal conditions were resumed. Many of the women excluded from underground workings have been found employment on screening

plants, preparing inert dust for treating coal dust; on general surface work and in quarries.

Fewer Accidents

The number of fatal accidents, during the year, was 208 involving the death of 248 persons, as compared with 214 accidents and 477 deaths in 1936. (In 1936 two major accidents occurred in which 244 persons lost their lives.)

There was a decrease in the death rate of men employed underground, in open workings and on the surface. Amongst women there was a decrease in the death rate underground and an increase in open workings and on the surface.

CAUSES OF FATAL ACCIDENTS

	Fatal Accidents	Percentage Of Total Number Of Fatal Accidents
Misadventure . . .	136	65.39
Deceased's fault . .	29	13.94
Fellow workmen's fault .	9	4.33
Subordinate officials' fault	17	8.17
Management's fault .	16	7.69
Faulty material . .	1	0.48
Total . . .	208	100.00

An analysis of serious accidents shows that out of a total of 1,156 persons seriously injured, 87 were permanently partially disabled and 1,069 were only temporarily disabled.

Death Rate Slumps

The death rate per thousand persons employed above and below ground was 0.93 which was below the rates in 1935 and 1936. The average rate for the preceding five years was 1.18. At coal mines the rate was 1.17, as compared with 2.58 in 1936. At mines, other than coal mines the rate was 0.50, as compared with 0.53 in 1936.

The death rate per million tons raised at coal mines was 8.95, while that of the previous five years was 11.12.

Deaths occurring in each class of mines were as follows:—

Two hundred in coal mines; 2 in iron ore mines; 12 in mica mines; 11 in limestone mines; 4 in stone mines; 8 in copper mines; 1 in a chromite ore mine; 4 in salt mines; 1 in a magnesite mine and 5 in manganese mines.

The health conditions in the coalfields of Raniganj and Jharia were, on the whole, satisfactory. It is reported from the Asansol Mines Board of Health which operates in the Raniganj coalfields, that the death rate among the colliery population was considerably lower than that of the general population and that the death rate was lower than in the previous year. The Jharia Mines Board of Health which operates in the Jharia coalfields reports that in these fields there was a slight increase in the death rate, though there were fewer deaths from cholera. Nearly 3,000 anti-cholera inoculations were performed during the year.

INCOME-TAX AMENDMENT BILL

Changes Made By The Select Committee

FULL TEXT OF SIR JAMES GRIGG'S SPEECH

Sir, I move:—

“That the Bill further to amend the Indian Income-tax Act, 1922, as reported by the Select Committee, be taken into consideration.”

The Report of the Select Committee has been now in the hands of Members for six days. I would like to begin by expressing my gratitude to all the Members of the Committee.

The House may be interested, even perhaps surprised, given the character of the Finance Member and the quality of the subject, to be told that never at any time was there a jarring or ill-tempered note. Controversies there were of course, and I am bound to confess that there were occasions when several persons were addressing the Committee at the same time. But there were comparatively few occasions when these controversies had to be brought to the arbitrament of the vote; and for the rest, I think, we all of us worked to hammer out a Bill which would meet, or try to meet, all the legitimate criticism which had been raised against the original draft.

Where everybody collaborated I think it might perhaps be regarded as invidious to single out anyone for special mention, but I would like to say how much the Leader of the Opposition contributed to the labours of the Committee. It is true that to the consideration of some questions he unfortunately came with a closed mind—but then so did I—so who am I to complain about that? Apart from these—and they were comparatively few—he certainly threw his immense knowledge, skill and energy into the common pool. Whether in the end he will be proud of his work in the Committee or not, I cannot say, but I certainly think he ought to be, and it is certainly true that if the Bill is passed into law, in anything like its present form, it will bear the impress of his skill and knowledge. My gratitude to him is of course tinged with a certain regret that my time in India has been so largely spent in public controversy with him, but I think I may say that in spite of the fact that our public relations have been of a somewhat unfriendly character, there is nothing of the sort in our private relations.

In general I think it may fairly be said that we made no fundamental alteration in the Bill, that it has been stiffened up against the tax-dodger and that we have tried to soften its rigours in the interests of the honest tax-payer wherever it has seemed safe to do so. In this latter respect it will be obvious from the report that some Members of the Committee wanted to go further, but even at the risk of losing my novel and entirely agreeable reputation for sweet reasonableness I must, in honesty, say that I do not think that this process of relaxation can be carried appreciably further.

There are two very serious dangers to be guarded against. The first is that in giving the honest tax-payer an umbrella you will make it big enough to shelter a number of artful dodgers with the result that the artful dodgers will seize the umbrella and push the honest tax-payer out into the rain, with the result that the honest man has got to pay a higher rate of tax by reason of their dodging. The second is that by providing in advance against all possible forms of tyranny on the part of the income-tax administration we shall so slow down the machine that a great deal of revenue is lost, and lost not in favour of the honest but tyrannically treated tax-payer, but lost in favour of the obstructive and dishonest.

I, therefore, ask Members, whenever they may be tempted to think that I am being unreasonable in resisting amendments that they should bear in mind these considerations. I do not for one moment mean to say that we intend to make the machine harsher for honest and dishonest alike. We do intend quite definitely to make it much harsher against the dishonest, but we have every intention of so improving the administration that none but the evasive and dishonest have any reason to fear it.

The powers to deal with obstruction and dishonesty must be there, but in the long run decent administration and supervision must be relied upon to ensure they are not being used against the righteous. There is one special topic I might mention in passing, namely, that of section 49 of the original Act relating to double income-tax relief. Now that the Congress high command have publicly associated themselves with the Federation of Indian Chambers of Commerce and have ordered Provincial Governments to do the same, we are bound to hear a good deal about this. I hope that we shall be able to discuss the matter in a non-controversial spirit; at any rate I do not propose to be the first to introduce controversy which would be entirely out of keeping with the spirit in which the Select Committee conducted its task. . . .

MR. S. SATYAMURTI (Madras City: Non-Muhammadan Urban): Then please get the sanction for us.

THE HONOURABLE SIR JAMES GRIGG: You throw the first stone. I think it wiser, therefore, to reserve the main burden of my remarks on this subject until my final reply.

SARDAR SANT SINGH (West Punjab: Sikh): We would like to have the figures.

THE HONOURABLE SIR JAMES GRIGG: The Honourable Member might at least let me finish my sentence.

For the present I will content myself with giving three or four figures in order that Honourable Members, and especially the Honourable Member from the Punjab, may be able to view the question in a proper perspective. I am not going in for any argumentation. I am merely giving the basis of information on which the House may work, and I ask the House to bear in mind this succession of figures.

An Indian company operating in India under the present law pays in all about 3 1/3rd annas in the Rupee.

An English company operating in India under the existing law pays at present in all 4 1/2 annas in the Rupee.

If section 49 is repealed, the English Company operating in India will pay more than 5 1/2 annas in the Rupee, and if the United Kingdom also repeals its reciprocal relief, the English Company operating in India will pay 7 1/2 annas in the Rupee.

That is the first set of figures.

The second fact is that for every lakh of relief that India gives in respect of these doubly-taxed companies as a whole, the United Kingdom gives two lakhs; in other words, the United Kingdom at present bears at least two-thirds and probably more of the cost of the relief.

A third set of facts relates to the total amount at stake. I see quoted in another place the figure of 180 lakhs a year; and, certainly, in some earlier years the total amount of relief reached that figure. The figure, according to latest statistics, is about 85 lakhs, of which 25 lakhs is company super-tax or corporation tax which accrues to the Centre, so that the amount available to augment provincial finances if this relief is repealed, is not 180 lakhs, but 60 lakhs, and that figure is not appreciably different from the amount we should hope to get if the present clause 4 is passed into law *plus* the concomitant repeal of the exemption of leave salaries from income-tax.

I might now go on to say a few words about the three general points raised in the reservation signed by the five Congress Members of the Committee. The first point related to the need for simplification, and I apologise for placing before the House the experience in Great Britain in this connection. In England the tax has been in operation for 139 years, and for the whole of that time people have been saying that the income-tax is too complicated and that the complications are unnecessary. And I take it that the first point raised in this reservation of the five Opposition Members is, that although the income-tax is far simpler than the English law, it is still much too complicated. Perhaps

I might be allowed to read a few extracts, first from the Macmillan Codification Committee on this subject, and, secondly, from the American Review of the Macmillan Report.

"Income-tax in this country was first imposed in 1799 by a Statute introduced by the younger Pitt to meet the cost of the Napoleonic Wars. This Act contained no fewer than 124 lengthy sections and several schedules. The Government of the day sought to allay the dismay which a measure of such formidable complexity might occasion by issuing as a separate publication 'A Plain, Short, and Easy Description of the Different Clauses of the Income-tax, so as to render it familiar to the meanest capacity'. It is to be feared that this well meant effort failed of its purpose, for it is best remembered now as the subject of a caricature by Gillray. But it is not without interest to note that from the very outset the intricacy of our income-tax legislation was the subject of popular derision."

I will now quote a few extracts from paragraph 20 of the Report.

"Probably no chapter of our legislation has incurred more condemnation from the judiciary for its drafting imperfections. It would be easy to compile a lengthy anthology of judicial censure"

No one could be more sympathetic with the difficulties which beset the draftsman's task than we are after our experience of them in the course of our own labours, and we discuss the matter more fully hereafter; for the present we are only concerned to exhibit the nature of the statutory material upon which we have had to work."

Again paragraph 24 says:—

"To state the simplest rule in terms which are proof against misinterpretation requires the highest skill. The difficulty becomes immensely greater when it is necessary to legislate in general terms so as to cover every conceivable case which may arise in a region of infinite diversity."

Time and again, as a particular clause has been under discussion by the Committee, it has been found to afford scope for criticism which might well have proved interminable, had it not been recognised that our task was not to achieve logical perfection but to produce an instrument for practical use."

Paragraph 26.—"From what we have said above, it will be obvious that to expect from us a codification of the law of income-tax which the layman could easily read and understand was a vain hope, which only the uninstructed could cherish. Our instructions were to aim at 'making the law as intelligible to the tax-payer as the nature of the legislation admits', and the significance of these qualifying words will be manifest. Income-tax legislation must, by its very nature, be abstract and technical, and can never be easy reading."

I think the Honourable the Leader of the Opposition will agree with this!

"It is concerned with principles and methods of calculation which it is difficult to express in words without an appearance of complication, as any one will realise who attempts to describe in writing even a simple mathematical process."

Now, here are a few extracts from an American Review of the Macmillan Committee's Report:—

"The intricacy of our own income-tax seems at least more unavoidable in the light of this result of years of effort by British experts"—*I think this Committee took about seven years for its labours.*

"Certain it is that the draft of the Bill recommend in the present report is far from easy reading and presents not a few perplexities to an American reader.

"It is in the field of practice and administration that the English most excel, and we have most to learn. Important lessons on these points can be learned from many places in the report. In over a century, reported English income-tax cases number about 1,800, which the Committee rightly refers to as a 'vast body of judicial interpretation'. But already our own case law on the subject bulks nearly ten times as large and shows no signs whatever of diminishing. In refusing to establish a practice of administrative finality we necessarily weaken the quality of administrative action. There is in this an ever-widening vicious circle. The extent to which we can safely follow the British example in these matters is, of course, debatable. That we should give more careful attention to such problems seems hardly open for dispute".

I take it that the intention of that American review is shown that Americans have tried to have a comparatively simple income-tax law and have thrown upon the courts to a much greater extent the responsibility of interpreting it than in the case of the English law, and their attempt at simplification has in fact been a great mistake.

Now I think those extracts will show, as I started out to show in dealing with the subject of income-tax, that complications are inevitable if the law is to be both comprehensive and equitable.

Take one difficulty. Economists are by no means agreed as to what does constitute income, and therefore, for a practical measure we have to abandon theoretical considerations and specify piecemeal how we propose to charge different kinds of income.

I agree that it would be much simpler if we could have a simple provision and leave it at that—much simpler for the Legislature, but not for the tax-payer.

This particular reservation gives one example of the kind of simplification which the five Members think might be adopted. They want a section which says categorically that incomes shall not be taxed twice in the same hands, and they think that if that principle were embodied in one place in the Bill, in a good many other places where it is now embodied it could be omitted. This principle has already been recognised both in the United Kingdom and in India, and to the best of my knowledge, not even the most ardent and tyrannical income-tax officer has ever tried to tax the same income twice. There are judicial rulings in the United Kingdom to the effect that even without an express provision in the Act it would be quite

wrong to do this. Therefore, since this principle is already judicially recognised, I do not think it will save complication but rather add to it, to state it specifically as an over-all provision in the Act.

The third point raised—I will come back to the second one on the slab system—in this particular reservation is, I think, purely a matter of drafting. It is quite true that as a result of this reservation we have looked into the Bill and have found one duplication already which will be the subject of amendment when we come to the relevant clause, that is, the method of calculating tax as provided in section 15 and again in section 17. So far we have not noticed any other duplication or obscurity, but if Honourable Members think that they have discovered them and if they will point them out they will certainly be considered carefully. But I am afraid that these minor amendments are not going to simplify the Bill very much, as the authors of the Dissenting Minute hoped, and if they will forgive me, I would like to point out in their Minute a certain sentence which discloses the very type of absurdity which the authors condemn in the Bill. The sentence is this:—

"This would very much simplify the provisions dealing with calculation of income-tax, if not render them wholly unnecessary."

"Appearance Of Simplicity"

Surely, the Honourable Members do not mean that you can so simplify the Act as to make no income-tax payable, and if there is some income-tax to be paid, it seems to me that you must make some provision for its calculation. I use this example as an illustration, not in any spirit of superiority, but merely in order to point out that you have got to be on your guard against attempts to introduce in a complicated measure an appearance of simplicity which, in fact, does not achieve reality.

I come to the second point in their Note of Dissent which relates to the 'slab' system.

The proposal is to change over from the 'step' system to what is called the slab system, the 'step' system being a system of charging income-tax at a single rate on the whole income of each tax-payer with certain marginal reliefs, and the 'slab' system being a system of charging successive slices of income at progressively higher rates of tax, the first slice bearing no tax whatsoever.

The proposal to introduce this system has been very generally welcomed, and it has been suggested that, although this matter of rates is primarily a matter for the annual Finance Bill, some specific declaration on the slab system should be adopted in the Bill. Of course, it is conceded that it would be quite improper to tie ourselves down or to provide in this present Bill the actual scale of rates, because that would preclude the discussion of it at the time of the budget, but I am afraid that without inserting the actual rates of the scale into the Bill it is not possible to provide more specifically for the 'slab' system than we have done.

There are in various places in the Bill provisions which would not be there if it were not the intention to adopt the slab system and which would have to be altered if the slab system were omitted.

Honourable Members will notice that one of the changes made by clause 3 of the Bill is to omit the words "applicable to the total income of an assessee" after the words "rate or rates". That is made solely with the idea of introducing the 'slab' system.

Then again, in the old section 17 of the Act there was a provision for marginal reliefs which becomes unnecessary under the 'slab' system, and that provision has been omitted.

There are other indications too in other alterations. For example, the addition of sub-section (4) to section 15 made by clause 16 of the Bill would be entirely meaningless but for the abolition of the 'step' system, and so would the change made by clause 70 in sub-section (3) of section 58G.

So that I hope Honourable Members will now be satisfied that it is not possible to go further than we have done in providing in the Bill for the 'slab' system.

Tax-payers' Gain

I realise that that rather precludes the discussion of the Bill in relation to any specific scale. But, nevertheless, I think I might remind Honourable Members of a few consequences of the 'slab' system, taking as an illustration the specimen scale given in the Report of the Income-tax Committee. Up to Rs. 8,000 a year everybody would pay less than they do now. Between Rs. 8,000 and Rs. 24,000 a year some would gain and some would lose. This may seem an odd result, but it is due to the inequalities and absurdities of the present 'step' system. Above Rs. 24,000 everybody will have to pay more. In the first class I have mentioned, that is, up to Rs. 8,000 a year, there are 240,000 tax-payers. In the second class, there are 45,000 tax-payers, and under the third class, something under 10,000. At a modest computation, under the specimen scale adopted in the Report, something like 260,000 tax-payers out of 300,000 would actually pay less than they do under the existing law; in other words, more than five-sixths of the total number of tax-payers.

I ask Honourable Members opposite to bear this in mind when they are subjected to propaganda, whether scrupulous or unscrupulous, from outside.

MR. MANU SUBEDAR (Indian Merchants' Chamber and Bureau: Indian Commerce): What will be the exemption minimum?

THE HONOURABLE SIR JAMES GRIGG: Under the specimen scale? I have been reading the specimen scale. I think it will in effect be Rs. 2,000, as in the present law, but instead of a substantial tax being paid at the level just above Rs. 2,000

MR. K. SANTHANAM (Tanjore *cum* Trichinopoly: Non-Muhammadian Rural): Are we to understand that you are adopting the specimen scale?

THE HONOURABLE SIR JAMES GRIGG: Sir, I would like to conclude my remarks this morning by giving the House some insight into the propaganda that has been going on. I will read a passage from a circular letter from the Central Income-tax Committee. One might suppose that it was the Select Committee, but it is not. The memorandum is signed by a number of

rich and influential Bombay business men. I shall read to you their concluding passage:

"You are aware that there is very little time at our disposal, as the Select Committee will be completing its deliberations in the course of the next few days and the special Sessions of the Central Assembly will meet on the 10th November, 1938, to consider the Bill in the light of the Report of the Select Committee. We, therefore, feel confident that you will spare no time to move in the matter on the following amongst other lines:

"1. To call public meetings of protest and pass Resolutions similar to the one given below."

I need not read out the Resolution. It is the usual stuff.

"2. To send telegrams conveying the said protest resolutions to the Honourable the Finance Member, to Government of India and the Party Leaders of the Central Legislative Assembly and to forward a copy of the same to us.

"3. To wait in deputation on the Honourable the Finance Member to the Government of India and the respective Party Leaders in the Central Assembly either jointly with this Committee or on your own as is feasible or expedient, and to bring home to them the inequities of the several clauses, specially those referred above.

"We shall thank you to let us know the line of action you have hitherto pursued and now propose to pursue in this matter. We need hardly add that this Committee is prepared to render all assistance you or your Association may desire in this behalf. A copy of the resolutions, telegrams, etc., passed and despatched by you may please be forwarded to us forthwith."

SIR COWASJI JEHangIR: What is wrong about that?

THE HONOURABLE SIR JAMES GRIGG: I will give you some of the Resolutions. This one comes from Cocanada:

"We the undersigned piecegoods merchants Cocanada strongly oppose new income-tax Bill proposed by Government and appeal you to resist emphatically. It is death blow to commerce cottage industry reducing every one to adversity."

That is pretty good, sending it to me! I have just pointed out that about five-sixths of the tax-payers under the Bill will get off with paying less. The next one is from Rajahmundry:

"My association regrets the Government's proposed new income-tax Bill and strongly opposes specially clauses 4 and 22 as they totally endanger Indian trade cottage industry throwing lakhs people unemployed without bread."

There is another one from the Rajahmundry Muslim League:

"Rajahmundry Muslim League oppose strongly new income-tax Bill proposed by Government. It is ruinous to trade rural industry affecting thousands Muslims of these parts."

Now, we pass on to Vizagapatam. This is from the Vizagapatam Muslim League:

"Vizagapatam Muslim League appeals you to oppose persistently the new Income-tax Bill owing to its most harmful effect on Indian trade handmade industry specially of Muslims."

Then again this is from the Vizagapatam Cloth Merchants' Association:

"My association strongly protests against taxation of foreign incomes in new Income-tax Bill and appeals you to oppose successfully because it kills Indian commerce and drastic to cottage industry rendering lakhs without livelihood."

Now, I go on to Masulipatam: This purports to come from one Q. V. I. Rao:

"The Masulipatam Muslim League" (or Q. V. I. Rao as the case may be) "appeals you strongly to oppose the Income-tax Amendment Bill as it is very disastrous to the trade generally leaving thousands of people unemployed."

I will read another one from Masulipatam :

"We the undersigned Piecegoods Merchants of Masulipatam oppose strongly new Income-tax Amendment Bill and appeal you to resist Government's proposal as this leaves several lakhs destitute in streets ruining our Indian trade and industry and while hereby confirming the same" (I think they are referring to the telegram) "I request your good self to see that the Bill under reference is not passed to safeguard the interest of the merchant population as a whole."

MR. SRI PRAKASA: Have you had any telegram from the scheduled classes?

THE HONOURABLE SIR JAMES GRIGG: I have a good many telegrams from the Honourable Member's class. It is quite easy to expose this kind of propaganda when it comes to one's notice. But there must be a good deal of stuff going on more insidiously that one never hears of, but I hope that with these examples that I have given of the origin and character of this kind of propaganda Honourable Members will be able to consider the Bill on its merits and not on the desires of interested classes.

The Bill is not a Bill, as it has been called, to give favours to the British. It is a Bill to give favours to the poorer Indians and also to provide money for the provinces. It is a Bill which will make the rich of all communities pay more and it will stop them dodging their proper contribution to the welfare of the country and no amount of unscrupulous propaganda can prevent this being recognised, in the long run, certainly, and I hope in the short run.

The text of Sir James Grigg's speech ends here. The following is a summary of the important changes made by the Select Committee; they do not, however, alter the main features of the Bill as introduced into the Assembly last April.

SELECT COMMITTEE'S CHANGES

The definition of "dividend" has been modified, and now excludes bonus shares.

For the purpose of determining whether a person is resident in British India the Committee has substituted the definition recommended in the Income-tax Enquiry Report, 1936.

The Central Board of Revenue has been given powers to appoint Commissioners of Income-tax without reference to particular areas, and has also been given specific control over all officers in the Department, one object being to enable it more effectively to supervise the imposition of penalties and to see that the heavier penalties proposed are applied equitably.

Then, whilst the Committee have not altered the basis of taxation of foreign income, they have recommended the allowance of foreign income-tax in arriving at the profits to be assessed by the Income-tax Department in India.

An important change has been made in the allowance for depreciation. The carry-forward of the accumulated depreciation under the old Act is not to be restricted to six years but is to be added to the capital sum upon which depreciation is to be allowed and thus carried forward for an indefinite period.

A new provision has been introduced for the special case in which managing agency commis-

sion is shared among two or more recipients and provides a means by which each of the recipients may be charged only on the share which he is actually entitled to receive.

Life Assurance Premia

The restriction of the allowance for life assurance premia to Rs. 6,000 has been modified so that the limit is now Rs. 12,000 in the case of Hindu undivided families.

The Bill as sent to the Select Committee contained a provision for the assessment of the incomes of husband and wife at the rate applicable to the aggregate income of both, but the Select Committee has deleted this provision leaving, however, the provision to assess as the income of the husband such of his wife's income as is derived from assets transferred to her from him.

Section 23A of the Act which deals with the non-distribution of profits by companies has been amended and simplified so that it will no longer be necessary to determine whether a company is a public company or is a company under the control of more than five persons.

An important amendment of the section dealing with penalties is to restrict the imposition of penalties to incomes over Rs. 3,500 where the delinquent has not received a separate notice to make a return. This should go a long way to prevent harsh treatment of small assesseees under the stricter conditions and heavier penalties to be imposed.

The original Bill gave the Income-tax Officer the right to make additional assessments for six years back, but this has been altered to four years in the normal case and eight years for cases of deliberate concealment or fraud.

One of the most contentious clauses in the Bill was the one giving power to the Income-tax Officer to enter premises and search the books between sunrise and sunset. This section has been modified so that the Income-tax Officer may only visit premises and make enquiries unless he gets the written authority of the Commissioner of Income-tax to enter the premises with the object of looking for and stamping books.

The Very Rich

Two new sections have been inserted to prevent the "legal avoidance" of income-tax and super-tax by the manipulation of holdings of securities. These long and complicated clauses will only affect very rich people.

A defect in the definition of "Accountant" which considerably troubled Registered Accountants has been remedied, and Registered Accountants are now specially referred to in the Bill. Lawyers and Registered Accountants who are, of course, amenable to disciplinary action by the authorities who regulate their respective professions cannot under the Bill as amended be disqualified by the Commissioner of Income-tax from representing assesseees in income-tax proceedings. If such a man commits any professional misconduct, the Commissioner's remedy will be to report it to the authority which can take disciplinary action.

CANADA'S LIKES AND DISLIKES

India Pavilion In Toronto Exhibition

HINTS THAT INDIAN TRADERS SHOULD NOTE

The Indian Pavilion was almost completely sold out, brisk business was done in sports goods, new lines of woven furnishing fabrics and chiffon were exhibited and orders for Indian arts and crafts were booked when India participated for the fifth successive time in the Canadian National Exhibition which celebrated its Diamond Jubilee this year at Toronto, says a report just received from the Indian Trade Officer, London.

The exhibition was opened officially by the Right Honourable the late Lord Stanley, Secretary of State for the Dominions. There was a large and distinguished gathering representing a great diversity of nations.

The entire globe was encircled in a circuit of 51,165 miles of cables and land lines when a round-the-world message of greeting was despatched by telegram by Lord Stanley from the platform. *En route* the message was conveyed to the Prime Ministers of New Zealand, Australia, South Africa, the High Commissioner for India and the Secretary of State for the Colonies. These were the Governmental participants in the Exhibition. The message was brought back to Lord Stanley on the platform followed by replies from these officials, within five minutes of the dispatch of the original telegram. It was an impressive feat.

India was represented at the opening ceremony by the Indian Government Trade Commissioner in New York, who was also present at the India Stand during the first few days of the Exhibition. As, however, the Trade Commissioner's office in New York had only just been opened all arrangements connected with India's participation in the Exhibition had been carried out by the Indian Trade Publicity Officer in London.

In a magnificent setting with thousands of electric bulbs flashing on all sides, the Indian stand was prominent and its stalls were a centre of attraction. The stalls were grouped to give a wide range of Indian products consisting of raw agricultural and forest products and vegetable oils, jute webbings, leather and skins, bristles, silk and cotton scarves, cotton furnishing fabrics, cotton lace materials, brass, ivory and silver work, carved and inlaid woodwork, woollen carpets and camelhair rugs and sports goods.

Of the twenty-two exhibitors, two were from London, one each from New York and Toronto and the rest from India. Sports goods, exhibited by five firms, were popular. Three firms were represented by their Agents in Canada while the agency for one more firm was established after the end of the Exhibition. The exhibits of another firm were purchased by a firm in Quebec with a view to trying them out and negotiating for agency if the trial proved successful. Canadian buyers showed greater interest in Indian sports goods this year than before, particularly in tennis and badminton rackets and shuttlecocks.

Two qualities of carpets were exhibited and the trade showed distinct preference for the superior quality which was similar to Persian. The lower quality did not evoke much response although its price was almost half that of the superior grade. The Canadian market required carpets of fine texture, smooth pile and of dark rose, blue or red background, preferably with all over floral designs. Pale green or browns with coarse pile were not in demand.

For the first time camelhair rugs were on show. They were liked by the public and had retail sales been made, many could have been sold. The trade did not, however, take much to them probably because they were quite a new line which the trade did not feel disposed to try under the existing conditions and also perhaps because they were lines suitable for the summer season, the buying for which had not yet begun.

Woven cotton furnishing fabrics and chiffon and tie-and-dye silk scarves were other new lines exhibited this year. The furnishing fabrics were much admired by the public and the trade. In texture, colour and pattern they complied with the requirements of the market, but in price they could not compete with similar machine woven materials in Canada—the difference was about 30 to 50 per cent.

Chiffon scarves were found to be too stiff and showed signs of curling up at ends after two or three handlings. They were not regarded with favour, but the tie-and-dye scarves in numerous colours and designs showed prospects of securing business in more normal times. The trade seemed to be in a hesitant mood and did not feel inclined to try new lines.

The Canadian trade seems to have by now established its connection with firms in India and is buying its requirements direct from them.

The international situation has contributed to slackness in business. Orders booked this year were for Rs. 4,150, all for arts and craftware, though almost all the exhibits in the stalls were sold out and realised Rs. 6,400. They covered sports goods, silks, leather, carpets, brassware, woodware and ivoryware.

Twentyfive enquiries, as against thirtytwo last year, were received this year. They dealt mainly with vegetable oils, oilseeds and nuts; arts and crafts and carpets; jute webbing and cloth; hides and skins and bristles; sports goods and other miscellaneous enquiries.

PRACTICAL ZOOLOGY

Andamans Shell Fishery Possibilities

PROBLEMS OF CALCUTTA'S WATER SUPPLY

Quiet But Useful Work Behind The Scenes

Shell fishing in the Andamans has been carried on to such an extent as to have endangered, if not ruined, all commercial possibilities of regular fisheries, says the Report of the Zoological Survey of India Survey for the triennium ending 1938, just published.

Restricted though the Survey work of the Department was since the retrenchment in civil expenditure in 1931-32, its activities were yet varied and by no means inconsiderable.

Amongst others, investigations were carried out on (i) shell fisheries in the Andamans and their economic exploitation; (ii) fauna at the Pulta waterworks whence Calcutta gets its water supply and at Senchal lakes which supply water to Darjeeling; (iii) possible use of indigenous species of fish as larvivoracious forms in anti-malaria measures; (iv) identification of animals of economic importance from the medical or sanitary point of view for various scientific institutions; and (v) identification of human and animal remains excavated by the Archaeological Survey and other bodies at various prehistoric sites in different parts of India.

Of the shell fishery in the Andamans and Nicobars, the two common types of shell of *Trochus*, the mainstay of the fishery, are both found on the reefs and boulders between tide-marks, at depths ranging from two to seven fathoms on the weather side within half to one mile from the shores of the islands. The younger shells up to 5 cm. in diameter, are found throughout the year amongst coral shingle and under coral slabs between tide-marks, but are rather scarce in the areas frequented by the adult shells. There is no evidence at present in support of the view that the young shells are mainly confined to depths of over 7 fathoms, and that they crawl up to the shallower waters on reaching maturity.

Sexual maturity is reached in the female when the shell has attained a diameter of 9 cm., and in the male when it reaches a diameter of 6-7 cm. It seems almost certain that there is no definite breeding season for this species in the Andamans and Nicobars, and that it breeds throughout the year, with perhaps an intensive spell of breeding during or immediately after the warm seasons. The age of the species in the area has been determined at over 10 years, after which apparently death results from senility. The rate of growth of the shell is fairly rapid before the attainment of sexual maturity, but becomes progressively slow thereafter. The maximum sized shells obtained in these waters do not exceed 15 cm. in minimum diameter.

Poaching For Shells

In the present state of our knowledge of the bionomics of these forms, the only practical and

inexpensive measure for rehabilitating the fishery, recommended to the authorities, was the entire stoppage of fishing for a term of years, the minimum period suggested being three years. As, however, fishing by poachers is unfortunately still known to be carried on and as no suitable means for preventing it are available, it has been decided to issue restricted licenses with a view to keeping some control over the fisheries in the area.

A detailed survey was carried out during the period of the fauna of the filter-beds, settling tanks, etc., at Pulta, and observations were made on the seasonal changes that occur in the composition of the fauna as a result of various biological factors from month to month and, sometimes, even from week to week. These investigations, which are of great importance for a continuous supply of properly filtered water for the large population of Calcutta were commenced in May, 1936, with the concurrence of the Government of India and with the funds provided by the Corporation of Calcutta, and, with a few interruptions, have since been in progress.

What Calcutta Does Not Drink

Large collections were made during the investigations of animals from the settling tanks, cisterns, chambers and filter-beds. These consist of members of various groups of the animal kingdom, from microscopic Protozoa and other organisms to microscopic animals, such as fish, frogs and reptiles. Over 131 species have already been identified but the number probably exceeds 200.

It has been possible to evaluate the various biological factors which influence the working of the slow-sand filter-beds. Definite seasonal variations have been found in the animal populations of the filter-beds, which can be co-related with the presence or absence of aquatic vegetation, the quantity of silt held in suspension and the salinity of water. Elimination of certain types of undesirable animals from the filter-beds such as freshwater sponges, molluscs and related forms, has to a certain extent been brought about by the regular flushing of the main pipes.

Filter-beds

Further, it has been possible to divide the working of the filter-beds into four distinct periods. It has been found that little influence is exerted by the animal populations of the filter-beds during the first period (from January to March), while during the second or the pre-monsoon period (from April to middle or end of June) and the fourth or the post-monsoon period (from October to December) the animal populations are certainly very important factors against the efficient working of the beds. During the third or the monsoon period, which extends from about the middle of June to the end of September, there is a large quantity of silt in the water; this, in addition to choking the beds, provides the necessary *milieu* for the growth of certain harmful species of insects of the Chironomid family.

The adoption of a few simple measures suggested for the control of the harmful agencies for maintaining the filter beds in an efficient state of working, has already been attended with a great deal of success. A certain amount of experimental work has already been carried out for determining the exact influences of the various injurious organisms, but detailed investigations to evaluate the various factors and discovering natural agencies to control the harmful types which interfere with the efficient working of the beds are essential before proper measures can be suggested for their complete control.

Silt Water Wedge

A preliminary survey was made of the River Hooghly, which is the source of the Calcutta water supply, from Calcutta to Nadia, a distance of about 100 miles, with a view to studying the distribution of the fauna, particularly the fishes. From the analyses of samples obtained it seems clear that a fair number of estuarine and marine forms have invaded the upper reaches of the River Hooghly, and that the number of such forms is much greater now than at the end of the eighteenth century, when a survey was made. Such forms are mostly bottom-living species and though they now appear to have become acclimatised to fresh waters, there seems little doubt that their migrations and earlier stages of adaptation were facilitated by a bottom wedge of salt water carried up the river with the tides.

The studies made, which are of great importance in their bearing on the water supply of Calcutta, show that the salinity of the water of the River Hooghly is gradually increasing, and that the flow of the fresh water downstream is unable to counteract the influence of the tides to the same extent as it was before the present deterioration of the river.

Anti-Mosquito—Fishes

Investigations were also carried out of the fauna in the Teesta Valley. The opportunity was taken to study the animal populations of the water works at Senchal in Darjeeling. As an extension of this work, investigations were also carried out on the hill-stream fauna of the Kumaon area in the Western Himalayas, and valuable information collected regarding the fish fauna of some streams in the Doon Valley.

A survey of a preliminary nature was conducted of the fauna of certain parts of the Santhal Parganas, which it is hoped to extend in the Chota Nagpur plateau westwards to the Satpura range. The collections obtained from this area should make it possible to discuss the origin and relationships of the aquatic fauna of the country and may throw some light on the palaeogeography of the mountain ranges of this plateau, which are believed at one time to have been connected with the Himalayas and may, therefore, have served as the route for the migration of the Himalayan aquatic fauna to Peninsular India.

At the special request of the authorities of the Malaria Survey of India, a detailed review was made by the Zoological Survey of such indigenous fish as are of use as mosquito larvicidal forms.

An examination was made of the animal remains excavated from the pre-historic Chalcolithic sites at Harappa, Punjab, and a detailed account prepared of the large number of remains discovered. The study of these remains made it possible to draw some important conclusions in regard to the domestication of animals in India and thereby provide corroborative evidence regarding the stage of civilisation to which the inhabitants of the Indus Valley had advanced.

INCOME-TAX AMENDMENT BILL

(Continued From Page 167.)

A very important change has been made with regard to the assessment of life assurance companies which were formerly assessed in accordance with the rules made by the Central Board of Revenue. The Committee felt that the rules governing the assessment of these important companies should be contained in the Income-tax Act itself and not be relegated to rules which could be made or amended by the Central Board of Revenue without reference to the Legislature.

Accordingly the rules for assessing life assurance companies are now put into the Act itself and have been considerably modified. It is not possible to explain the technical changes in detail, but broadly speaking the United Kingdom basis has been adopted with modifications to suit Indian conditions.

By far the most important recommendation of the Committee is the setting up of an Appellate Tribunal. Time was not found to amend the Bill to provide for this change, but Government have undertaken to introduce the necessary amendments in the Assembly. The type of Tribunal proposed is similar to that recommended in the Income-tax Enquiry Report, except that the right of appeal to the High Courts is being retained, and the personnel of the Tribunal would not therefore need be of such high status. In order to prevent dislocation through the imposition of too many changes in the administration at once, the Committee have suggested that the Appellate Tribunal should not function for about two years.

Wanted—A UNIFORM MINIMUM STANDARD Medical Schools Conference Decisions

NEED OF A SOUND GENERAL EDUCATION

Major-General Bradfield's Address

It is necessary that a medical man should possess a general education and not merely a technical training, although with the ever increasing demand on the students' time this objective becomes more and more difficult to attain. The General Medical Council of Great Britain has in recent years taken steps in the right direction by trying to raise the standard of the entrance examination to the profession, and if a medical man is to fulfil his role adequately, his interest must be wide and his general education sound.

This is what Major-General E. W. C. Bradfield, Director-General, Indian Medical Service, said in his presidential address, at the Conference on Medical School Education, held in New Delhi on November 7, 1938, stressing the need for a sound general or preliminary education before admission to the study of medicine.

"It gives me great pleasure", said Major-General Bradfield, "to welcome you this morning to this conference which has been called on the initiative of the Central Government and with the ready co-operation of Provincial Governments and their Medical Councils to discuss medical school education. That is a matter which is of importance not only to the medical profession but to the whole of this country, for your deliberations will be concerned with the education and training of a class of medical men and women who have contributed in no small measure to the well-being of India.

"This is I believe the first occasion on which representatives of the authorities responsible for medical school education have met together, and I am specially glad to welcome to our deliberations teachers from institutions under the management of missionary societies and other bodies whose activities in the field of medical relief have earned our gratitude and admiration.

Quality

"The medical school and the quality of the practitioner who obtains the licence of the various examining bodies are problems which call for the careful consideration of every government in India, especially to-day when the profession in the towns is overcrowded and when improvements in road and other means of transport have made the services of the highly trained doctor available in many of the villages.

"The proposal to initiate an enquiry into the standards of education for medical licentiates was first made in 1933, when discussions regarding the constitution and functions of the Medical Council of India were in progress, but no action was taken at that time because medical education is a subject under the control of Provincial Governments.

"In 1935, my predecessor, General Sir Cuthbert Sprawson, examined the conditions obtaining and the facilities available at all the medical schools and prepared a valuable memorandum in which he drew attention to their deficiencies and shortcomings as well as to the great

variation in their usefulness and standards. He also suggested an all-India meeting of representatives of medical schools and their controlling bodies and this was generally welcomed by Provincial Governments. In September of last year I again reviewed the position.

"Since General Sprawson's note, and almost certainly as a result of the attention which he drew to their shortcomings, more especially in regard to teaching equipment, a definite advance has been made towards the upgrading of certain medical schools and towards the attainment of the standards which he advocated. In one instance, that of the Stanley Medical School of Madras, such improvement has been achieved that steps have already been taken to convert it into a medical college providing university education of the standard required by the Medical Council of India. Further, the standard of general education required for admission to the schools in Bombay has been raised to that of the Intermediate Science Examination.

"Nearly every medical school is embarrassed by a surplus of students and as the students find it increasingly difficult to earn a living after obtaining the qualification, it is eminently reasonable not to open the door of entry too wide. I think the case for improving the entrance examination is very strong. It avoids disappointment and loss of time and money to both the prospective student and his parents if he is checked at the outset from attempting a career for which he is inadequately fitted.

"Statistics obtained from the various medical schools show that in the Government schools the number of applicants with the Intermediate Science qualification amount to 35.7 per cent. of the vacancies available, though in the two women's schools no candidate had such a qualification. Of the non-Government schools, the I.Sc. applicants numbered 57.3 per cent. and women applicants of the same standard number about 25 per cent. of the vacancies available.

"We have also to consider the general principles, including the length and extent of the curriculum, of the education to be imparted at medical schools. This is an especially difficult

item on the agenda which we can only deal with on general lines. The medical curriculum is already a long and arduous one and I might remind you of a statement recently made by an eminent British Surgeon, Mr. Scuttar, who said 'the medical curriculum has reached the limit of human endurance, and it is only the genius of the medical student for clearing his brain completely after every examination that enables him to preserve his sanity.'

Resolutions Adopted

The following are the resolutions adopted at the Conference:—

I. This Conference recommends that one uniform minimum standard of training and qualification for practitioners of modern scientific medicine should be established throughout India at an early date and that this standard should be such as shall satisfy the requirements laid down by the Medical Council of India.

II. In accordance with Resolution No. 1 this Conference recommends that the standards of equipment and training in medical schools should be raised to those required for recognition by the Medical Council of India.

III. Until the requirements of the Medical Council of India can be fully met this Conference recommends that improvements be effected in the existing Medical Schools on the lines laid down in Resolutions Nos. 4, 5, 6, 7 and 8.

IV. This Conference recognises that in some cases difficulties will be experienced in raising schools to the standard required by the Medical Council of India and recommends that in such cases improvements should be introduced gradually, as circumstances permit, in the following stages of training:—

(i) General preliminary education qualifying for admission to medical schools.

(ii) Pre-clinical scientific subjects.

(iii) Clinical subjects.

V. This Conference is of opinion that, wherever it may be necessary to continue a medical qualification of the licentiate standard for some further period, steps should be taken to introduce the uniform minimum standard of general education laid down by the Medical Council of India as a preliminary qualification for entrance to medical schools.

VI. This Conference recognising that provincial Medical Councils are the Bodies responsible for supervision of provincial medical education considers that full use should be made of their powers in order to standardise and improve education in medical schools.

VII. This Conference recommends that no student should be allowed to begin the medical curriculum proper until he has attained the age of 17 years or will attain that age during the first term of the curriculum.

VIII. This Conference desires to emphasize the importance of a better training in the subjects of midwifery and diseases of women during the medical school curriculum. This training, in addition to courses of systematic instruction and clinical demonstration, should

include practice and instruction at a prenatal clinic and should provide for the conduction of at least ten cases of labour under adequate supervision of a qualified medical officer.

MEMBERS PRESENT

The following attended the Conference:—

GOVERNMENT OF INDIA

Major-General E. W. C. Bradfield, C.I.E., O.B.E., K.H.S., I.M.S., Director-General, Indian Medical Service (CHAIRMAN).

Major A. N. Chopra, I.M.S., Assistant Director General, Indian Medical Service (SECRETARY).

PROVINCES

Bengal

1. Major-General P. S. Mills, C.I.E., K.H.P., I.M.S., Surgeon General with the Government of Bengal, Calcutta.
2. Dr. A. D. Mukerjee, 27-C, Upper Circular Road, Calcutta.
3. Dr. Susil Kumar Mukherjee, 1-1, Wood Street, Calcutta.

Bombay

1. The Surgeon General with the Government of Bombay, Bombay.
2. Lt.-Col. S. I. Bhatia, M.C., I.M.S., Principal, Grant Medical College, Bombay.
3. Khan Bahadur Captain N. J. Vazifdar, President of the College of Physicians and Surgeons, Bombay.
4. Sir Mangaldas V. Mehta, O.B.E., St. Vincent, Malabar Hill, Bombay.
5. Khan Bahadur Sir Nasarvanji Cohksey, C.I.E., Dubash Estate, Nepean Sea Road, Bombay.

United Provinces

1. Colonel J. A. S. Phillips, C.I.E., V.H.S., I.M.S., Inspector-General of Civil Hospitals, U. P., Lucknow.
2. Dr. Gokul Narayan Byas, Principal, Medical School, Agra.
3. Rai Bahadur Dr. B. N. Vyas, Member, U. P. Medical Council, 14, Clyde Road, Lucknow.

Punjab

1. Colonel G. G. Jolly, C.I.E., V.H.S., I.M.S., Inspector-General of Civil Hospitals, Punjab, Lahore.
2. Lt.-Colonel Amir Chand, I.M.S., Professor of Medicine, King Edward Medical College, Lahore.
3. Major S. M. K. Mallick, I.M.S., Principal, Medical School, Amritsar.

Bihar

1. Colonel H. Stott, O.B.E., I.M.S., Inspector-General of Civil Hospitals, Bihar, Patna.
2. Lt.-Colonel J. C. John, O.B.E., I.M.S., Superintendent, Medical School, Darbhanga.
3. Major D. P. Bhargawa, I.M.S., Professor of Surgery, Prince of Wales Medical College, Patna.

INDIA'S NEW MUSEUM

Post Office Antiquities And Curiosities

NEW ATTRACTION FOR DELHI SIGHTSEERS OPENED

The First Telegram To Tibet

An interesting Museum housing rare postal curiosities and antiquities, old and current stamps, curiously addressed envelopes, photographs of celebrities in postal development and models of post offices, was opened to the public on November 12 by the Hon'ble Sir Thomas Stewart, Member for Communications, in the Imperial Secretariat, New Delhi. Mr. G. V. Bewoor, C. I. E., I. C. S., Director General of Posts and Telegraphs outlined the history of the Museum.

"The idea of constituting a Museum" said Mr. Bewoor, "emanated from Sir Hubert Sams, the then Director General of Posts and Telegraphs in June 1930". It was meant as a collection not of every conceivable object, but only of such as were of great interest to the Department and might be of interest to visitors to Delhi.

"About four years ago the Department began to take part in exhibitions held in various parts of India by opening Posts and Telegraphs stalls therein. The object was to give publicity to the various services rendered by the Department and to create interest and good-will on the part of the public.

"We propose to continue to add to this Museum and to make it in time worthy of this great Department of public utility.

"I am sure the Museum will interest you and we hope that visitors to this historic imperial city will not fail to include it among the many places they ought to visit and that philatelists will especially find here much material for inspection and study".

The stamp collection is estimated to be worth well over four lakhs of rupees. It includes the earliest stamps issued in 1852 by Sir Bartle Frere for use in the province of Sind. These stamps had a short life of about two years and they now rank among the great rarities sought after by stamp collectors the world over.

The development of the printing and design of stamps since their first public use in India in 1854 is illustrated in a collection which contains every stamp issued from that date up to the present.

The different designs of postal orders and also of cash certificates are on show.

The first stamps to be produced in India were the red half-anna stamps with 9½ arches of the 'lion and palmtree' design. Only nine hundred sheets were printed by lithography. These stamps were, however, never issued as the stock of vermilion colour used in the printing ran out. The finally accepted design was a blue stamp of 8 arches. The first watermark was the elephant's head, later replaced by the five-pointed star in 1866.

First Stamp Issue

The first issue of stamps was made at Madras on September 15, 1854 in the denominations of ½, 1, 2 and 4 annas. Till 1926, the stamps were printed by De La Rue and Company of London. Since then they have been printed in India at the Security Printing Press, Nasik. It is of antiquarian interest that stamps continued to be printed with the inscription "East Indian Postage" till 1882, when it was changed to "India Postage".

Of particular interest are the blue proof panes of ½ anna and 4 anna stamps, which are unique in the whole world, freak stamps, air mail stamps and stamps commemorating the opening of New Delhi and the Jubilee of His Majesty King George V. There is a complete collection of British Empire stamps including "the first and finest stamps ever made in the world", namely, the 1840 British one-penny stamp and the "I. R." official stamps of £1 denomination, now quoted at £200.

A remarkable and rare photograph is that of Sir Rowland Hill, the founder of the penny post and the "father of the modern post office system". This photograph was secured by Mr. Bewoor, the present Director General of Posts and Telegraphs, in 1930 when he was Postmaster-General, Bombay, from Col. Berkeley Hill, I.M.S., a grand-nephew of Sir Rowland.

There is also an interesting photograph of Khan Bahadur Fakir Hussain, an ex-officer of the Department who served the Government for 37 years, during which period he took leave for only two months. He rose to be superintendent of Post Offices from the humble position of a clerk. Apart from his great services to the Department he holds over a dozen field service medals.

The gleaming and massive tusks on show, remind one of the elephant Kyaw Hla, a faithful servant of the Department for eighteen years. A glass case contains many small articles such as curiously addressed envelopes, interesting contents of dead letters, etc., and the photograph of a dwarf telegraph messenger and his family. The messenger is still in service.

First Air Mail

Among the collection of numerous interesting covers is probably the "first air mail" envelope in the whole world. The famous Allahabad Exhibition was held as far back as 1911 and the Indian Postal Department was able to arrange an air service from Naini to the Exhibition, across the river. The envelope is dated Allahabad February 19, 1911, and signed by Becquet, the French pilot who flew the aeroplane.

That India is well on the way to manufacturing many of her own telegraph and telephone requirements is indicated by the number of "gadgets" and telephone sets on show. These have been made in the Department's Work-shops at Calcutta.

Cable exhibits show that one cable carries sometimes as many as three hundred pairs of wires in it. The stupendous task of the mechanic will be grasped when it is realised that when joining one cable to another, he has to connect each separate pair in one cable to the corresponding pair in the other.

Amongst the curios in the Museum is a one hundred million Marks note—a colossal paper fortune, worth—nothing.

A postcard containing no less than 30,000 words suggests what can be sent for a few pices by the economically minded. Another envelope bears merely the addressee's photograph with the name of the town underneath: yet it was promptly and correctly delivered.

A message from the Dalai Lama, on the occasion of the opening of the telegraph line constructed by the Indian Posts and Telegraphs Department in 1933 to Lhasa is on view, it bears the holy seal of the Dalai Lama.

Medical Schools Conference

(Continued From Page 172.)

Central Provinces And Berar

1. Colonel D. H. Rai, M.C., I.M.S.,
Inspector-General of Civil Hospitals, C. P. & Berar, Nagpur.
2. Major F. R. W. K. Allen, I.M.S.,
Superintendent, Robertson Medical School, Nagpur.

Assam

1. Colonel E. S. Phipson, C.I.E., D.S.O., I.M.S.,
Inspector-General of Civil Hospitals, Assam.
2. Lt.-Colonel C. H. P. Allen, I.M.S.,
Superintendent, Berry White Medical School, Dibrugarh.
3. Dr. R. R. Chaudhuri, M.B., Silchar.

Orissa

Lt.-Colonel G. Verghese, I.M.S.,
Director of Health and Inspector-General of Prisons, Orissa, Cuttack.

Sind

Major J. E. Gray, I.M.S.,
Superintendent, Medical School, Hyderabad.

Delhi

Lt.-Colonel R. H. Candy, C.I.E., I.M.S., Chief Medical Officer, Delhi.

Indian States And Others

King Edward Hospital Medical School, Indore

1. Lt.-Col. M. A. Nicholson, I.M.S.,
Chief Medical Officer, C. I., Indore.
2. Lt.-Col. R. M. Kharegat, I.M.S.,
Chief Medical Officer, Rajputana.
3. Lt.-Col. L. E. Barton, I.A.,
Resident in Mewar and Political Agent, Southern Rajputana States.
4. Diwan Bahadur Sir H. N. Gosalia, M.A., LL.B.,
Dewan and President, State Council, Barwani State.
5. Dr. E. W. Hayward,
Principal Medical Officer, Jodhpur.
6. Lt.-Col. Sir James Roberts, C.I.E., I.M.S. (Retd.),
C/o Chief Medical Officer, C. I., Indore.

Hyderabad Darbar

Dr. Hyder Ali Khan,
Director, Medical Department, Hyderabad Dn.

Mysore Darbar

Miss Albuquerque.

Gwalior Darbar

1. Lt.-Col. S. S. Antia,
Chief Medical Officer, Gwalior.
2. Dr. Shankar Lal,
Palace Physician, Gwalior.

Medical Council of India

R. B. Dr. A. L. Mudaliar,
Govt. Hospital for Women and Children, Madras.

All-India Medical Licentiate Association

1. R. B. Dr. Hari Ram,
Nicolson Road, Delhi.
2. Dr. A. Viswanathan,
131, Coral Merchants Street, Madras.

Christian Medical School, Miraj.

Dr. L. B. Carruthers,
C/o Miraj (Senior) Darbar, Miraj.

Women Representatives

1. Dr. C. L. Houlton, W.M.S.,
Chief Medical Officer,
Women's Medical Service, New Delhi.
2. Dr. E. N. Wells,
Acting Principal,
Women's Christian Medical College, Ludhiana.

Visitors

1. Dr. Clement C. Chesterman, O.B.E.,
Medical Officer, Baptist Missionary Society,
44, Lower Circular Road, Calcutta.
2. Dr. Ruth Young, M.B.E., W.M.S.,
Principal, Lady Hardinge Medical College,
New Delhi.

NO PARTITION OF PALESTINE

All Party Conciliation Conference To Meet

EARLY DECISIONS ANTICIPATED

British Government's Statement Of Policy

We here publish the full text of the Statement of Policy on Palestine issued on November 9 by His Majesty's Government in the United Kingdom.

Sub-titles have been inserted and certain paragraphs printed in bold face type to facilitate reading, but these modifications do not appear in the originals and they are not to be taken as an official expression of opinion or emphasis.

The Royal Commission presided over by the late Earl Peel published its Report in July, 1937, and proposed a solution of the Palestine problem by means of a scheme of partition under which independent Arab and Jew States would be established while other areas would be retained under mandatory administration.

In their statement of policy following upon publication of the Report, His Majesty's Government in the United Kingdom announced their general agreement with the arguments and conclusions of the Royal Commission and expressed the view that a scheme of partition on the general lines recommended by the Commission represented the best and most hopeful solution of the deadlock.

The proposal of the Commission was framed in the light of information available at the time and it was generally recognised that further detailed examination would be necessary before it could be decided whether such a solution would prove practicable.

This proposal was subsequently discussed in Parliament and at meetings of the permanent Mandates Commission and Council and Assembly of the League of Nations, when His Majesty's Government received authority to explore the practical application of the principle of partition.

A despatch of 23rd December 1937, from the Secretary of State for the Colonies to the High Commissioner for Palestine, announced the intention of His Majesty's Government to undertake the further investigations required for the drawing up of a more precise and detailed scheme. It was pointed out that a final decision could not be taken in merely general terms and that further enquiry would provide the necessary material on which to judge, when the best possible partition scheme has been formulated, its equity and practicability. The despatch also defined the functions and terms of reference of the Technical Commission who were appointed to visit Palestine for the purpose of submitting in due course to His Majesty's Government proposals for such a detailed scheme.

Partition Committee's Report

His Majesty's Government have now received the Report of the Palestine Partition Commission, who have carried out their investigations with great thoroughness and efficiency and have collected material which will be very valuable in further consideration of policy.

Their Report is now published together with a summary of their conclusions. It will be noted that four members of Commission advise unanimously against the adoption of the scheme of partition outlined by Royal

Commission. In addition to the Royal Commission Scheme, two other schemes described as plans B and C are examined in Report. One member prefers plan B. Two other members including the Chairman consider plan C is the best scheme of partition which, under the terms of reference, can be devised. A fourth member, while agreeing that plan C is the best that can be devised under the terms of reference, regards both plans as impracticable. The Report points out that under either plan, while the budget of the Jewish State is likely to show a substantial surplus, the budgets of the Arab State (including trans-Jordan) and of the Mandated Territories are likely to show substantial deficits.

The Commission reject as impracticable the Royal Commission's recommendation for a direct subvention from the Jewish State to the Arab State. They think that on economic grounds a customs union between the States and Mandated Territories is essential and they have examined the possibility of finding a solution for the financial and economic problems of partition by means of a scheme based upon such union. They consider that any such scheme would be inconsistent with the grant of fiscal independence to Arab and Jewish States.

Their conclusion is that on a strict interpretation of their terms of reference they have no alternative but to report that they are unable to recommend boundaries for proposed areas which will afford a reasonable prospect of eventual establishment of self supporting Arab and Jewish States.

His Majesty's Government after careful study of Partition Commission's Report have reached the conclusion that this further examination has shown that the political, administrative and financial difficulties involved in the proposal to create independent Arab and Jewish States inside Palestine, are so great that this solution of the problem is impracticable.

His Majesty's Government will, therefore, continue their responsibility for Government of the whole of Palestine.

They are now faced with the problem of finding alternative means of meeting the needs of the difficulty of the situation described by the Royal Commission which will be consistent with their obligations to the Arabs and Jews.

His Majesty's Government believe that it is possible to find these alternative means. They have already given much thought to the problem.

Foundation Of Peace

In the light of the reports of the Royal Commission and of the Partition Commission it is clear that the surest foundation for peace and progress in Palestine would be an understanding between Arabs and Jews, and His Majesty's Government are prepared in the first instance to make a determined effort to promote such an understanding. With this end in view they propose immediately to invite representatives of the Palestinian Arabs and of neighbouring States, on the one hand, and of the Jewish agency on the other, to a Conference with them as soon as possible in London, regarding future policy, including the question of immigration into Palestine. As regards representation of Palestinian Arabs, His Majesty's Government must reserve the right to refuse to receive those leaders whom they regard as responsible for the campaign of assassination and violence.

His Majesty's Government hope that these discussions in London may help to promote agreement as to future policy regarding Palestine. They attach great importance however to a decision being reached at an early date. Therefore if the London discussions should not produce agreement within a reasonable period of time, they will take their own decision in the light of their examination of the problem and of the discussions in London and announce a policy which they propose to pursue.

In considering and settling their policy His Majesty's Government will keep constantly in mind the international character of the Mandate with which they have been entrusted and their obligations in that respect.

HOW TO GET TO THE HEJAZ

Everything A Pilgrim Should Know

PITFALLS FOR THE UNWARY

Sailings : Food : Costs : Taxes

Pilgrims leaving for the Hejaz from India by the direct sea route will find clearly set out below all that they ought to know about sailing dates, costs, food and taxes.

A careful study of the information given will avoid disappointments and mishaps.

Sailings

Messrs. Turner, Morrison and Company Limited, Bombay, have notified the following provisional direct sailings after the month of Ramzan:—

S.S. "Islami" on the 12th December 1938 from Bombay.

S.S. "Rizwani" on the 8th December 1938 from Karachi.

S.S. "Khosrou" on the 12th December 1938 from Calcutta.

Subsequent to the above sailings from Bombay and Karachi there will be frequent sailings at short intervals up to the end of the outward pilgrim season.

The Scindia Steam Navigation Company, Limited, Bombay, have notified the following provisional sailings:—

S.S. "El Madina" on the 3rd December 1938 from Bombay, and on the 5th December 1938 from Karachi.

S.S. "El Hind" on the 10th December 1938 from Calcutta direct.

S.S. "El Madina" on the 23rd December 1938 from Bombay direct.

S.S. "El Hind" on the 7th January 1939 from Karachi direct.

S.S. "El Madina" on the 16th January 1939 from Bombay and on the 18th January 1939 from Karachi.

The above programme is subject to alteration without notice.

Food On The Voyage

All pilgrims will be supplied with cooked food by the Shipping Company during the voyage and cooking on board in pilgrims' private stoves or *sigreess* will be strictly forbidden.

First and second class pilgrims will be supplied daily throughout the voyage with morning tea, breakfast, luncheon, afternoon tea and dinner and all the usual table service will be provided.

Deck passengers will be supplied daily throughout the voyage with food on the following scale:—

(a) Morning tea—

(i) One cup of tea.

(ii) Two biscuits or one *chapati*, according to the pilgrim's choice.

(b) Day meal—

(i) Rice or *chapatis*, according to the pilgrim's choice in such quantity as the pilgrim may require.

(ii) One plate of mutton and vegetable mixed, on alternate days.

(iii) One plate of vegetable, with or without dry fish, according to the pilgrim's choice, on days on which item (ii) above is not supplied.

(iv) Dal in such quantity as the pilgrim may require.

(v) *Kachumar* or pickles.

(c) Afternoon tea—

One cup of tea.

(d) Evening or night meal—

(i) Rice or *chapatis*, according to the pilgrim's choice, in such quantity as the pilgrim may require.

(ii) One plate of vegetable.

(iii) Dal in such quantity as the pilgrim may require.

(iv) *Kachumar* or pickles.

Every deck pilgrim will be required, at the time of buying his ticket, to inform the person who issues the ticket whether he—

(i) will take rice or *chapatis* for the day meal and the evening or night meal; and

(ii) whether he will or will not have dry fish with the vegetable dish to be served on alternate days at the time of the day meal.

Arrangements have also been made on every pilgrim ship to make available to pilgrims certain other articles of food on payment of extra charges at the rates specified below:—

Article.	Rate.
	Rs. a. p.
Fowl (whole) with gravy	1 8 0 each.
Fowl	0 7 6 per plate.
Kofta	0 3 0 „
Mutton Korma	0 3 0 „
Biryani	0 7 0 „
Kahab shami	0 0 9 each.
Sardines	0 3 9 per tin.
Egg (boiled)	0 1 6 each.
Egg (fried)	0 2 3 each.
Khichri pulao	0 4 6 per plate.

Article.	Rate.	
	Rs.	a. p.
Curry and rice	0 6 0	per plate.
Rice	0 1 6	"
Paratha	0 2 0	each.
Chapati (without ghee)	0 0 9	"
Leavened bread	0 0 9	"
Biscuits	0 0 9	for two.
Halwa or pudding	0 3 0	per plate.
Sweetmeats	0 6 0	per seer or 28 tolas.
Dal	0 1 3	per plate.
Tea (without milk)	0 0 9	per cup.
Tea (with milk)	0 1 0	"
Coffee (with milk)	0 2 0	"
Soda water	0 1 6	per bottle.
Lemonade and other aerated waters (sweet)	0 2 0	"
Lemon squash	0 2 0	per tumbler.
Syrup (lemon)	0 1 6	"
Syrup	0 12 0	per bottle.
Butter	0 12 0	per tin.
Ghee	0 12 0	per pound.
Jam	0 6 0	per tin.
Pine-apple	0 6 0	"
Condensed milk (Anglo-Swiss)	0 12 0	"
" (Cow's Head)	0 4 6	"
Sugar	0 2 3	per pound.
Chutney	0 12 0	per bottle.
Oranges	0 1 6	each.
Sweet lemons	0 1 6	"
Apples	0 2 0	"
Plantains	0 0 6	"
Hot water	0 0 6	per-gallon.

Any medicines or any articles of special diet for infants or invalids or sick persons brought by pilgrims for use during the voyage will, when necessary, be cooked free of charge in the ship's kitchens.

All cooks and attendants employed on board the ship for cooking and serving the pilgrims' food will be Muslims..

Every deck pilgrim will have to provide his own plates, cups and other receptacles in which food may be served to him during the voyage.

Pilgrims will be allowed to take water from the "waste-not" taps fitted to the tanks on board the ship during four periods of two hours each, namely:—

- (i) 5 A.M. to 7 A.M.
- (ii) 12 NOON to 2 P.M.
- (iii) 4 P.M. to 6 P.M.
- (iv) 8 P.M. to 10 P.M.

The Master of the ship, however, will have discretion to ration fresh water if considered necessary.

Pilgrims should make their own arrangement for the transport of their baggage from ship to shore and *vice versa* at Jedda and make payment to the dhowmen direct.

If a pilgrim travelling by the lowest class available on a ship is not in possession of a return ticket, he will have to deposit with the Executive Officer of the Port Haj Committee of the port at which he proposes to embark, for the purpose of defraying the cost of the return voyage from Jedda, the sum mentioned below:—

Port.	Pilgrims Aged 10 And Over.	Pilgrims Under 10.
	Rs. a. p.	Rs. a. p.
Bombay	60 0 0	55 0 0
Karachi	57 0 0	53 8 0
Calcutta	84 0 0	77 0 0

Cost Of 1939 Hajj

It has been estimated for the current Hajj season that at the current rate of exchange (One pound gold = 110 Piastres Miri = Rs. 23-8-0) the minimum cost of pilgrimage including a visit to Madina to a pilgrim who proceeds to Jedda as a deck passenger and travels on a camel in the Hejaz will be approximately Rs. 575 if he sails from Bombay, Rs. 570 if he sails from Karachi and Rs. 625 if he sails from Calcutta.

Substantial additions to these figures will also be necessary if the pilgrim chooses to adopt more comfortable means of locomotion and a higher standard of living.

As the estimated minimum cost would prove insufficient, should there be a rise in the value of gold, it is suggested that no pilgrim, however hardy or poor, should start on the pilgrimage unless he has provided himself with at least Rs. 585.

In the case of a pilgrim travelling second class on board the ship and in a motor bus in the Hejaz, the cost is estimated to be about Rs. 1,180 in the case of pilgrims sailing from Bombay, Rs. 1,155 in the case of those sailing from Karachi and Rs. 1,255 in the case of those sailing from Calcutta. If the pilgrim travels first class on the ship and uses a touring motor car for journeys in the Hejaz, the expenditure would be approximately Rs. 1,750, Rs. 1,725 or Rs. 1,825 according to whether he sails from Bombay, Karachi or Calcutta.

The estimates of expenditure mentioned in the preceding paragraph include cost on account of *dues, taxes, etc., collected in advance at Jedda*. Under the revised Sa'udi regulations, a pilgrim must pay in advance on landing at Jedda, a sum of £ gold 2, and 81½ piastres Miri, equivalent to about Rs. 65 on account of various

charges and taxes, *e.g.*, Mutawwifs' and Wakils' fees, etc., without payment of which no pilgrim will be allowed to proceed to Mecca. Pilgrims are therefore warned that the British Legation at Jedda cannot be responsible for any exemption or remission of the said dues, and a defaulter may have to return to India without performing the Hajj.

AVOID ARAB RIYALS

Counterfeit Arab riyals have been found in circulation in the markets of Saudi Arabia. The authorities are alarmed by the circulation of these false coins, and feel that if it is allowed to continue, the prosperity of the country will be affected. The Saudi Government is not sure

whether these counterfeit coins are manufactured in the country or imported from abroad. They have, therefore, adopted strong measures to ensure that persons uttering these forged coins are dealt with severely.

Orders have been issued to merchants and traders, enjoining them carefully to examine Arab riyals paid to them, and to hand over to the authorities any person who passes them any false coin. In the circumstances, pilgrims to the Hedjaz should avoid carrying riyals, for two reasons, first—they will be running the risk of having them confiscated, on their arrival in the Hedjaz, and second, they may unwittingly come into possession of coins which may involve them in detention and enquiry.

Steamer Fares

The maximum pilgrim fares to Jedda which Messrs. Turner, Morrison and Company, Limit-

ed and the Scindia Steam Navigation Company, Limited, have fixed for the ensuing Haj season are:

		<i>Single with food</i>			<i>Return with food</i>		
		Rs.	a.	p.	Rs.	a.	p.
From Bombay	First class	407	0	0	621	0	0
	Second class	282	0	0	446	0	0
	Deck	113	0	0	173	0	0
From Karach	First class	395	0	0	597	0	0
	Second class	270	0	0	422	0	0
	Deck	110	0	0	167	0	0
From Calcutta to Jedda (and back to Calcutta in case of return fare)	First class	444	0	0	695	0	0
	Second class	319	0	0	520	0	0
	Deck	142	0	0	226	0	0
From Calcutta to Jedda and back to Bombay	First class	..			658	0	0
	Second class	..			483	0	0
	Deck	..			199	8	0
From Calcutta to Jedda and back to Karachi	First class	..			646	0	0
	Second class	..			471	0	0
	Deck	..			196	8	0

For children under 10 years of age these fares will be less by the following amounts, on account of food charges:—

		<i>Single</i>			<i>Return</i>		
		Rs.	a.	p.	Rs.	a.	p.
From Bombay	First class	19	8	0	39	0	0
	Second class	19	8	0	39	0	0
	Deck	5	0	0	10	0	0
From Karachi	First class	13	8	0	27	0	0
	Second class	13	8	0	27	0	0
	Deck	3	8	0	7	0	0
From Calcutta	First class	25	8	0	51	0	0
	Second class	25	8	0	51	0	0
	Deck	7	0	0	14	0	0

ON THE FRONTIER

Events In August, September And October, 1938

UNREST CONTINUES ON DIMINISHING SCALE

Constant Vigilance Required

The efforts of the Faqir of Ipi to instigate widespread tribal disturbances had by the end of July been successfully countered and there were no large bodies of hostile tribesmen assembled in the field, though hostile gangs were active and the roads in the area generally were unsafe for normal use.

During August, the tribal *jirgas* of the Daur, Titi Madda Khel and Hassan Khel Wazirs were interviewed; fines were inflicted for offences committed by various members of these tribes, and the return of kidnapped persons still held in captivity was demanded. On August 22, the *jirga* of the Tori Khel was summoned and the tribe was given a period of one month in which to return kidnapped persons and make a settlement for their hostile members. This resulted in the return of three of the kidnapped persons early in September, but the tribe as a whole failed to profit by the warning and further pressure had later to be exerted against it.

Despite previous warnings the Madda Khel Wazirs permitted the Faqir of Ipi to return to their territory and make use of it as a base for anti-Government activities. Further warnings were therefore issued, and, as these were disregarded, pressure was brought to bear on certain sections of the tribe. As a result the Faqir removed himself to the neighbourhood of Musa Nika, north west of Wana.

Throughout the month minor offences continued including sniping, the destruction of telegraph lines and the planting of bombs on roads. Several raids into the Bannu district occurred in the early part of the month, the offenders being members of the gang of one Mehr Dil, who used as their base the difficult, hilly and sparsely inhabited area of tribal territory, known as the Gumatti salient, lying immediately to the north of Bannu and extending up to the Bannu-Kohat road.

Other means of pressure having failed to secure the eviction of Mehr Dil, this area was proscribed for air action, until the gangs dispersed. The *jirga* of the Amadzai Wazirs, who are the tribe who inhabit this tract, was also interviewed and fines were inflicted for their failure to evict the gangs. Mehr Dil later moved to the border of Kohat district, and on August 22, his gang was located in the hills to the north of Mari Indus where it was engaged by Frontier Constabulary reinforced by a detachment of troops and suffered several casualties. Further south eight persons were kidnapped by Bhitanni gangs in the course of three raids on villages in Dera Ismail Khan district.

Events In September

Early in September it was arranged for the Wana and Razmak brigades to meet at Torwam, about halfway between those two places, in order to escort military stores that were being sent to Wana. During the movement, the Razmak brigade met with heavy sniping, nine Indian other ranks being wounded by sniping at Ladha. On September 12, a sharp action took

place at the Sharawangi Narai, in thickly wooded and mountainous country, when a large gang led by Sher Ali, a notorious Mahsud bad character, endeavoured to oppose the junction of the two brigades and suffered relatively heavy casualties. After this action little was heard of Sher Ali for sometime.

Meanwhile, the Faqir of Ipi remained at Musa Nika, and endeavoured to raise a fresh *lashkar* amongst the tribes. Accordingly the area was, after due notice, proscribed for air action from September 1, until September 8, by which time the Faqir and his brother, Sher Zaman, had moved north to Gumbakai, some ten miles north-west of Razmak. Their arrival in this area led to an increase of outrages in North Waziristan, particularly near Razani where sniping of camps increased.

During September, Mehr Dil and his gang, with other outlaws, launched fresh raids from the Gumatti salient into Bannu district. Accordingly between September 20—25, three columns of Scouts, with the co-operation of aircraft and Frontier Constabulary, entered the salient and drove out the gang. Mehr Dil himself was wounded, but owing to the exceptionally difficult nature of the country, attempts to capture him failed. Further south two serious raids took place. On September 13, a gang of Bhitannis raided the village of Shahbaz, near Tank, kidnapping ten persons, while at the end of September a party of some sixty Wazirs and Mahsuds, instigated by Sher Ali, raided Vihowa, a village in Dera Ghazi Khan district. The gang was engaged by levies and village defence parties, the Commandant of the levies being seriously wounded, whilst detachments of Scouts and troops were sent to cut off its retreat, and aircraft co-operated. These concerted measures were so successful that the gang lost 12 killed, 4 wounded and 2 taken prisoner whilst the remnant escaped after abandoning much stolen property.

Pressure was brought to bear on the Niamat Khel and Aba Khel sections of the Bhitanni tribe who were responsible for the raid and kidnapping at Shahbaz in September. This was successful and by September 21, all the kidnapped persons had been released.

Events In October

Between September 30, and October 5, the Razmak brigade carried out a reconnaissance into the country to the south of Datta Khel. The brigade was sniped in camp on several nights and met with minor opposition from scattered parties of hostile tribesmen, who were engaged.

(Please Turn To Page 182.)

DRUG CONTROL IN INDIA
Poor Quality Of Widely Used Preparations
A FACTOR IN MATERNITY MORTALITY

Biological Laboratory's Revelations

The urgent need for proper drug standardization and for a comprehensive scheme of drug control is brought out by a recent investigation undertaken by the Biochemical Standardization Laboratory, Calcutta, into the liquid preparations of Ergot sold in the Indian market and in common use for medicinal purposes.

The Laboratory, established by the Government of India in Calcutta in 1937, as a first step towards tightening control over the manufacture, importation and distribution in the Indian market of drugs inferior in quality and spurious in character, has since its inception been engaged in an all-India survey of the quality of drugs. Some of the findings recorded suggest a serious state of affairs regarding the quality of Ergot preparations that are daily being used in India.

Chiefly used to stop post-partum haemorrhage, an emergency condition where energetic treatment with fresh and potent Ergot preparations is essential to save the life of a mother, the poor quality of liquid extract of Ergot which is the commonest preparation employed in hospitals and private obstetrical practice in India constitutes, therefore, a grave menace to maternal health, and is possibly also a contributory factor to maternal morbidity from a subinvolved and imperfectly contracted uterus.

A tabular statement shows the analysis of the quality of Ergot preparations on the Indian market.

Of 130 samples of Ergot preparations of different types, *e.g.*, Liquid Extract of Ergot, Ammoniated Tincture of Ergot, Solid Extract, Ergot Powder, etc., tested in the Laboratory, 112 samples or 86·15 per cent. were found much below strength, and in 58 or 44·61 per cent. no active principles whatever could be detected.

Of the samples examined 108 were of indigenous manufacture and 27 of foreign make.

The causes underlying this state of affairs are not clearly understood. While the deterioration of the active principles of Ergot in the hot and humid climate of India may be an important factor in bringing about the poor quality of Ergot

QUALITY OF ERGOT PREPARATIONS ON THE INDIAN MARKET

Preparations Tested	Total	Origin		Preparations Below Strength			
		Indigenous	Foreign	Total No.	Per Cent.	No Active Principle	
						Number	Per Cent.
1. Liquid Extract of Ergot	108	86	22	96	88·88	54	50·0
2. Liquor Ergot Fortis	8	8	..	5	62·5	..	..
3. Ergot Prepared	8	5	3	6	75·0	..	..
4. Ammoniated Tincture of Ergot	2	2	..	2	100·0	2	100·0
5. Ergotinine Citrat	2	1	1	2	100·0	2	100·0
6. Ergot Powder	1	1	..	..	..	..	..
7. Solid Extract of Ergot	1	..	1	1	100·0	..	..
	130	103	27	112	86·15	58	44·61

preparations, the opinion is expressed that it seems probable also that an inferior quality of both crude and finished preparations of Ergot, unsaleable in their countries of origin because of stringent drug laws, are being purchased in India at a cheap price.

General Low Quality

That the results obtained from these investigations are representative of the general quality of Ergot preparations all over India, is evident since the samples subjected to analyses were obtained from practically all the Provinces of British India through the Surgeons-General, Inspectors-General and other Heads of Medical Public Health Departments. A few were obtained direct from the Customs Office, within a few days of their importation, while another group of preparations were picked up at random from the open market.

The standardization of the Ergot preparations were carried out by pharmacologists and pharmaceutical chemists working in close co-operation. The 'Colorimetric Method' of assay described in the British Pharmacopoeia, 1932, with the modification subsequently described in the Addendum to the British Pharmacopoeia, 1936, was generally employed, and wherever necessary, the results were checked by the 'rabbit-uterus' method of biological assay.

ON THE FRONTIER

(Continued From Page 180.)

In the meantime the Tori Khel sections had failed to comply with the orders which had been given to them, in August. They were therefore informed, on October 8, that certain of their winter grazing grounds would be closed to them and that members of the tribe would be denied access to the settled districts which they are accustomed to visit in winter, until such time as they released certain kidnapped persons and controlled their hostile members. These grazing grounds are located near Tal in Tochi and in the area between the Khaisora and Shaktu valleys.

During October certain kidnapped persons were released by other tribes, but others were kidnapped in the course of raids carried out by tribal gangs into Bannu and Dera Ismail Khan districts. In addition minor offences by small parties of hostile tribesmen were of frequent occurrence during the month including sniping of troops and camps, damage to telephone lines and the planting of bombs on roads or beneath bridges. These incidents were less numerous in south Waziristan, but a gang burnt down an unoccupied police post at Manji.

By the end of October no large bodies of hostile tribesmen were anywhere assembled. But the presence of raiding gangs, whose leaders are still controlled by the Faqir of Ipi, necessitated a state of constant vigilance on the part of troops in Waziristan and the civil and military forces responsible for the defence of the border. As the result of the winter migration offences against Government are likely to decrease in the uplands, but conditions in the area are still disturbed.

NOTE:—A review of events in May, June and July appeared in the **INDIAN INFORMATION SERIES**, dated September 15, 1938.

KING EMPEROR'S ANTI-TUBERCULOSIS FUND

GRAND TOTAL NOW RS. 63,46,981

The twenty-third list of subscriptions actually received up to November 15, 1938, in response to Her Excellency the Marchioness of Linlithgow's Appeal for the King Emperor's Anti-Tuberculosis Fund, amounts to Rs. 1,55,729-14-7 which brings the grand total of cash in hand to Rs. 63,46,981-14-1.

The twentieth to twenty-third lists inclusive are given below:—

TWENTIETH LIST (30TH SEPTEMBER 1938)

Total Amount Previously Acknowledged . . .
Rs. 57,36,422-11-4.

Bengal

Through Provincial Organisation, Rs. 14,496-1-0;
The Secretary, Indian Red Cross Society, Bengal Provincial Branch, Calcutta, Rs. 2-5-0; Mr. P. M. Mukherji, Simla, Rs. 5-0-0; The Editor, "Indian Medical Gazette," Calcutta, Rs. 3-0-0. Total:—Rs. 14,506-6-0.

Bombay

Through Provincial Organisation, Rs. 1,00,000-0-0;
Through K. E. Anti-Tuberculosis Fund, Dharwar District, Rs. 7,185-8-3; Lodge Orion in the West No. 415-E.C., Poona, Rs. 100-4-0. Total:—Rs. 1,07,285-12-3.

Orissa

Through Provincial Organisation, Rs. 1,700-0-0.

Sind

Through Provincial Organisation, Rs. 5,000-0-0.

United Provinces

Through Provincial Organisation, Rs. 31,000-0-0.

Baluchistan

K. E. Anti-Tuberculosis Fund, Quetta, Rs. 676-0-0.

States

Rajgarh, Rs. 700-0-0; Jhabua, Rs. 270-0-0; Barwani, Rs. 81-1-0; Jaora, Rs. 27-9-6; Jigni, Rs. 25-0-0; Charkhari, Rs. 140-14-0; Makrai, Rs. 212-0-0; Jath, Rs. 1,049-10-0; Keonjhar, Rs. 17-3-0; Puddukkottai, Rs. 10,737-5-8; Jind, Rs. 180-13-0; Mandi, Rs. 493-1-3; Khairpur, Rs. 909-13-6; Jodhpur, Rs. 601-3-9; Jaipur, Rs. 44-10-0; Kushalgarh, Rs. 464-4-0; Western India States Agency Organisation, Rs. 25,000-0-0. Total:—Rs. 40,954-13-8.

GRAND TOTAL Rs. 59,37,545-11-3

Twenty-first List (15th October 1938)

Bengal

Through Provincial Organisation, Rs. 9,368-5-10.

Bihar

Through Provincial Organisation, Rs. 5,873-11-3.

Delhi

Through Provincial Organisation, Rs. 20,000-0-0;
Mr. M. R. Coburn, O.B.E., (9th Instalment) Rs. 5-0-0.
Total Rs:—20,005-0-0.

Madras

Through Provincial Organisation, Rs. 22,000-0-0.

N.-W. F. Province

6th Royal Bn. (Scinde), 31 F. F. Rifles, per Officer Commanding, Razmak (2nd Contribution), Rs. 350-0-0.

Punjab

Through Provincial Organisation, Rs. 10,000-0-0.

Baluchistan

K. E. Anti-Tuberculosis Fund, Quetta, Rs. 95-0-0.

Coorg

K. E. Anti-Tuberculosis Fund, Coorg, Rs. 67-0-0.

Centre

The Kinta Indian Association, Ipoh Federated Malay States, Rs. 100-0-0.

States

Datia, Rs. 1,925-11-0; Makrai, Rs. 0-0-3; Samthar, Rs. 600-0-0; Dhar, Rs. 925-0-0; Khandpara, Rs. 1,151-14-3; Tigiria, Rs. 61-8-3; Benares, Rs. 3,536-12-3; Hyderabad, Mr. T. P. Venkatachari, Retd. A. A. G., H. E. H. Nizam's Government, Hyderabad, Rs. 1-8-3; "Anonymous", Rs. 664-6-0; Alwar, Rs. 4,500-0-0; Udai-pur, Rs. 3,980-0-0; Jaipur, Rs. 42-6-0; Banswara, Rs. 1,815-0-0; Jodhpur, 329-2-0. Total:—Rs. 19,533-2-0.

GRAND TOTAL Rs. 60,24,938-0-7.

Twenty-second List (31st October 1938)**Assam**

Through Provincial Organisation, Rs. 13,000-0-0.

Bengal

Through Provincial Organisation, Rs. 27,205-4-7.

Bombay

K. E. Anti-Tuberculosis Fund, Dharwar, Rs. 777-12-0.

Delhi

Lt. Gen. Sir Roger Wilson, K.C.B., D.S.O., M.C. (Additional donation), Rs. 25-0-0; Mr. H. K. Sen Gupta, New Delhi, Re. 1-0-0. Total:—Rs. 26-0-0.

Madras

Through Provincial Organisation, Rs. 48,000-0-0.

N.-W. F. Province

48 Ind. M. T. Sec., Mir Ali, Rs. 9-0-0; Through Provincial Organisation, Rs. 2,175-0-0. Total:—Rs. 2,184-0-0.

Sind

Mr. M. L. Khanna, Shikarpur, Rs. 1-11-0.

C. & M. Station, Bangalore

K. E. Anti-Tuberculosis Fund, C. & M. Station, Bangalore, Rs. 6,500-0-0.

Hyderabad British Administered Area

K. E. Anti-Tuberculosis Fund, Secunderabad, Rs. 292-4-4.

Mount Abu

K. E. Anti-Tuberculosis Fund, Mount Abu, Rs. 536-6-0.

Baluchistan

K. E. Anti-Tuberculosis Fund, Quetta, Rs. 273-0-0.

States

Mohammadgarh, Rs. 57-11-0; Ajaigarh, Rs. 1,231-12-0; Chhatarpur, Rs. 3,002-7-3; Jashpur, Rs. 30-2-0; Cambay, Rs. 190-0-0; Sachin, Rs. 61-13-3; Kalsia, Rs. 1,474-11-9; Jubbal, Rs. 295-10-0; Jaipur, Rs. 770-1-9; Dholpur, Rs. 100-0-0; Kotah, Rs. 52,033-4-0; Porbandar Rs. 8,270-0-0. Total:—Rs. 67,517-9-0.

GRAND TOTAL Rs. 61,91,251-15-6.

Bengal Leads

The progressive totals of the amounts credited to the Central account at New Delhi in respect of the various Provinces on October 31, were:—

Assam, Rs. 93,192-7-9; Bengal, Rs. 5,05,523-1-7; Bihar, Rs. 57,520-3-1; Bombay, Rs. 4,70,725-10-6; C. P. & Berar, Rs. 50,689-10-3; Delhi, Rs. 90,771-1-0; Madras, Rs. 4,20,329-2-0; N.-W. F. Province, Rs. 43,317-9-9; Orissa, Rs. 43,679-0-0; Punjab, Rs. 3,83,178-0-6; Sind, Rs. 45,388-8-0; United Provinces, Rs. 1,83,952-11-3.

Twenty-third List (15th November 1938)**Bengal**

Through Provincial Organisation, Rs. 5,193-9-0.

Bombay

The Treasury Officer, West Khandesh, Dhulia, Rs. 2,259-14-0; Through Provincial Organisation, Rs. 20,000-0-0. Total:—Rs. 22,259-14-0.

Delhi

Mr. M. R. Coburn, O.B.E. (10th instalment), Rs. 5-0-0; Mrs. Tabuteau, New Delhi, Rs. 200-0-0. Total Rs. 205-0-0.

Madras

Through Provincial Organisation, Rs. 15,000-0-0.

Orissa

Through Provincial Organisation, Rs. 3,000-0-0.

Punjab

The Simla Rifles A. F. I. Club (proceeds of a sweep-stake promoted by the Club), Simla, Rs. 1,300-0-0; Through Provincial Organisation, Rs. 10,000-0-0. Total:—Rs. 11,300-0-0.

United Provinces

The Officer Commanding, Hill Depot, Kailana, Rs. 488-14-0.

Baluchistan

K. E. Anti-Tuberculosis Fund, Quetta, Rs. 13-0-0.

Centre

Central Excises and Salt Department, Northern India, Delhi, Rs. 211-0-0.

States

Datia, Rs. 100-0-0; Dhar, Rs. 15,200 0-0; Dhurwai Jagir, Rs. 16-3-0; Miraj (Junior), Rs. 1,581-4-1; Sakti, Rs. 3,000-0-0; Jind, Rs. 30-7-9; Bahawalpur, Rs. 34,528-7-3; Nalagarh, Rs. 1,500-0-0; Dhami (Simla Hills), Rs. 13-7-0; Keonthal (Simla Hills), Rs. 866-9-0; Faridkot, Rs. 20,875-13-6; Shahpura, Rs. 136-4-0; Dungarpur, Rs. 15,000-0-0; Jaipur, Rs. 57-12-0; Sirohi, Rs. 5,152-6-0; Total:—Rs. 98,058-9-7.

GRAND TOTAL Rs. 63,46,981-14-1.

IMPURE MILK PRODUCTS

STEPS AGAINST ADULTERATION

To prevent adulteration of dairy products on uniform lines in the various provinces of India, a draft set of model rules is under consideration of the Imperial Council of Agricultural Research.

In view of the urgency and importance of the subject, it is felt that efforts should be made to secure the greatest practical measure of uniformity in the bye-laws of the provinces, especially in measures to prevent:—

- (a) the sale of adulterated or misbranded milk and milk products;
- (b) the inspection of dairy farms, cowsheds, milk-shops, milk-plants and premises where milking is undertaken, and
- (c) the licensing of milk products, distributors and milk vendors, the conditions of the grant and revocation of licenses; and to prescribe the conditions under which milk intended for sale is to be produced.

It is realized that the prevention of adulteration is purely a provincial matter and that anything which may be done is likely to affect more than one Act in each province. In particular, standards of purity of food and the prevention of adulteration are provided for in provincial pure food acts, while matters like the licensing and control of dairies, cowsheds, etc., are covered by Municipal and Local Self-Government Acts which differ materially from province to province.

All that is possible, therefore, for the rules to state is what is considered to be technically necessary and feasible and to invite the provinces and States to consider the possibility of bringing their Acts, Rules and bye-laws into line.

Grading has now a definite legal meaning under the Agricultural Produce (Grading and Marking) Act, 1937. Dairy produce is included in the schedule to this Act and rules for the grading and marking of ghee have been made and grade-standards prescribed. Several ghee grading stations are already set up by the merchants and some of the States and nearly 15,000 maunds of ghee has been marketed under the 'Agmark' seals.

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Indian Information Series

Vol. III

New Delhi, December 15, 1938

No. 20

CONTENTS

	Page.		Page.
Better Profits For Agriculturists	220	Business Reply Cards	227
Deforestation Menace	226	Loyal Messages From Princes	229
Insurance In India	228	Christmas Greetings	237
Post Offices' Progress	230	Austrian Money Orders	237
Indians In South Africa	232	Telephone Development	239
India And World Trade	234	Foreign Parcels Insurance	239
Assam's Coal Reserves	236	Forest Insect Threat	241
Jute In U. S. A. Floods	238	Fuse Powders	241
A New Industry ?	240	Mental Hospitals Overcrowded	243
New Airport At Karachi	242	Timber's Electrical Resistance	243
India's Educational Problems	244	Anti-Tuberculosis Fund	245
Dairy Husbandry	246	Imperial Dairy Institute	246
Labour Disputes	248	Bangalore Dairy Experiments	247
Drug Manufacture	224	India 5,000 Years Ago	250
Indigenous Drugs	225	Postal Congress At Buenos Aires	250
Disease Prevention	225	Post Office on Wheels	250
Village Welfare Association	225	Medical Research Conference	250

BETTER PROFITS FOR AGRICULTURISTS

Planned Marketing And The Producer

VICEROY STRESSES NEED FOR STANDARDISATION

Provincial Ministers' Conference At Delhi

His Excellency the Viceroy opened the Provincial Ministers' Conference on Agricultural Marketing at Delhi on November 29, when important conclusions affecting the future planning of marketing surveys, grading and marking stations, the value of standard contracts, standardisation of marketing practices, weights and measures, division of work between the central and provincial marketing staffs, the utility of the radio in the dissemination of market news, elimination of physical waste, co-ordination of efforts and co-ordination of agricultural production and marketing, were reached.

Twenty-three Ministers representing Madras, Bombay, the United Provinces, the Punjab, North-West Frontier, Bengal, Bihar, Orissa, Sind, the Central Provinces and the States of Hyderabad, Baroda, Bhopal, Jodhpur, Patiala, Nawanagar, Gwalior, Travancore and Porbandar attended the Conference.

The Hon'ble Kunwar Sir Jagdish Prasad, Member for Education, Health and Lands, in asking His Excellency the Viceroy to declare the Conference open, referred to His Excellency's unquestioned authority on marketing, to the important part that His Excellency took as Chairman of the Marketing Supply Committee in Great Britain and the keen interest that he had shown in this question ever since his arrival in India.

Lord Linlithgow's Address

In declaring the Conference open, His Excellency the Viceroy said :

I am glad to welcome to the Capital this very representative gathering of Ministers from the Provinces of British India and from the Indian States. Your attendance here today, and many of you have travelled far in order to be with us, is welcome proof of the importance you attach to the subject of Agricultural Marketing. Let me say at once that your interest will be an immense

encouragement to all in the Government of India who have been associated with this most important aspect of agricultural improvement.

Sir Jagdish Prasad has referred to my past experience in the field of agricultural marketing. In Great Britain my colleagues and I signed the last of our five reports on the Distribution and Prices of Agricultural Produce in November 1923. These reports led, in 1924, to the setting up of the Marketing branch of the Ministry of Agriculture and in 1928 Parliament passed the Agricultural Produce (Grading and Marking) Act. I mentioned this because it is of interest to notice that in Great Britain it took about 5 years to get under way from the moment of the initial impulse.

In India, as Sir Jagdish has reminded us, the Royal Commission on Agriculture, reporting in 1928, stressed the great importance of Agricultural Marketing and linked it with transportation. In 1934 the Provincial Economic Conference led

to the initiation of the present marketing scheme under which the Government of India provide a central staff now consisting of 20 officers, while the Imperial Council of Agricultural Research has provided ten lakhs of rupees spread over a period of five years to meet part of the cost of Provincial Marketing Staffs. These grants were made in order that the all-India commodity surveys might be carried out on an uniform basis.

But it is worthy of comment that, at each stage, there has been spontaneous co-operation from the autonomous Provinces and States. Each provincial Government has from the outset, at its own cost, provided a Provincial Marketing Officer to take charge of the provincial section of the work and several Governments have provided additional marketing staff and, more recently, have taken over some of the experimental developments such as grading stations. Many of the States, of whom no less than 220 have co-operated in this matter, have provided their own marketing staffs, and they have all readily collaborated with the Central Marketing Staff both in the commodity surveys and in such practical matters as marking and grading.

In 1937 the Central Legislature passed the Agricultural Produce (Grading and Marking) Act, and it is significant to notice that in India this stage was reached about three years after Mr. Livingstone's arrival and rather less than two years from the completion of the Marketing Staff. In England, as I have told you, a period of five years elapsed between the setting up of the Marketing branch and the passage into law of the first Marketing Act. It is, I think, encouraging to note that despite the formidable complications and diversities of the Indian marketing system, merchants and market men in this country have shown themselves just as ready as their brethren in the West to avail themselves of well thought out marketing improvements.

The Position Today

The position today is that six marketing reports are now complete, and that a further four are well advanced. In congratulating all concerned upon the very promising beginning that has thus been achieved, I feel that I must affirm my conviction, born of my own considerable experience, that adequate preliminary surveys are essential to the construction of sound schemes of marketing. Careful economic reconnaissance is an essential preliminary of every sound scheme, and I would confidently recommend all who are responsible for the construction of such schemes to count neither time nor money wasted which are spent in prosecuting with zeal and efficiency these essential preliminary studies.

In work of this nature, anxious as we all of us naturally are to improve producers' prices, it is seldom wise to attempt the short cuts. Rough and ready methods may seem at the outset to give quick results, but those are not the results that will stand the test of time. Organized marketing means the application of scientific methods to the problems of collection and distribution. That is why emphasis is laid on the importance of basing all future action on an adequate assembly of tested facts. Again, in using those facts and in drawing deductions from them, the scientific is the only safe method, which is to mistrust each conclusion until it has been subjected to every possible test.

In India an important stage has now been reached for many marketing surveys have been completed or are well advanced, and broad conclusions have emerged which call for application on a wide scale. It is satisfactory to note that Central and Provincial Staffs did not await the completion of the all-India commodity reports before studying the possibilities of development. At a comparatively early stage the necessity of certain lines of improvement became clear. The standardisation of weights and measures, a wider adoption of the system of regulated markets, which had already proved its value in some parts of India, a fact emphasised by the Royal Commission on Agriculture, are recommendations common to all the reports.

A Fruitful Field

It was also apparent from the outset that grading and standardisation would offer a fruitful field for development and in consequence, on the recommendation of the Provincial Economic Conference of 1934, the preliminary studies on quality necessary for the consideration of grade standards were started simultaneously with the marketing surveys. This stage was followed by the setting up of experimental grading stations for such commodities as fruit, eggs and hides and skins which the surveys showed to be susceptible of such treatment. It was speedily found that, as in other countries, legislative action was needed to protect the marks, and as Sir Jagdish Prasad has said, the Agricultural Produce (Grading and Marking) Act directed to that purpose was passed by the Central Legislature in February 1937.

It is of interest to note that the total number of experimental grading stations now in operation is about 25.

Standardisation, the determination of grades, is more than agreement on convenient categories of physical attributes—size, colour, purity, water or fat content, and the like. Standards must be very definitely related to the requirements of the consumer, that is to the saleability of the produce. Standardisation is a prerequisite of effective advertisement. Standardisation, the determination and strict adherence to grades, is a key to distant markets, and—given improved world conditions—a sure road to expanding business.

But marketing organizations can do something beyond promoting the orderly and economic distribution and sale of primary produce. An efficient marketing organization should be the grower's intelligence bureau. Often you will find that the cultivator, who cannot himself be in touch with distant and overseas markets, will prefer a crop, or a particular variety of some crop, because of its agricultural advantage, that is, because it is easy to grow, or because it matures at a convenient moment in the seasonal routine of the holding, or appears to give a particularly heavy yield. Sometimes, indeed, a variety will be sown in deference to mere local fashion and familiarity.

The Marketing Officer

But the Marketing Officer, who knows the requirements of the ultimate markets and the prices ruling in those markets, is quite frequently in a position to advise the cultivator that he will increase his prospects of profit by growing some

variety other than that one which seems to possess the highest agricultural advantage. Evidently this function of a marketing service may be of great value in conditions in which world markets, in terms of the relative demand for different kinds of primary produce, are—for one reason or another—in a state of change and uncertainty. Causes so different as the development of synthetic substitutes, or the economic aftermath of a war, may substantially promote the demand for one type of produce at the expense of some other. Consider how much loss may be spared to the grower if his marketing organisation—what I have called his intelligence bureau—is able to provide him with very early warning of such a change in demand.

The improvement of marketing offers a fruitful field for co-operation between the Central Government, Provinces and States.

The development of marketing, in the main, falls within the provincial sphere, but the main problems are of a wider character. Though the production of many commodities is localised, the areas of concentration being scattered throughout the country and not being confined to any particular Province or State, the consumption of a product is generally spread over the whole country and many are of all-India importance both as regards our internal and export trade.

Wider issues relating to the finance of the primary producer are also involved, since marketing reforms are essential before the commercial banks can fully develop a system of short-term produce advances. In the report of the Agricultural Credit Department of the Reserve Bank of India for 1936 it is stated that short-term advances for marketing produce should be regarded as one of the most important parts of banking business, but that the commercial banks have hitherto been unable to develop produce advances to the extent of their capacity owing to the extraordinary diversification and vagueness of market conditions throughout India and the manner in which produce contracts are drawn.

Concrete Suggestions

In this connection, the Report stresses the importance of the following improvements in marketing, machinery and practice :

- (i) a reasonable standardisation of the staples and of the contracts relating to them ;
- (ii) the provision, in properly regulated markets and elsewhere, of suitable storage under conditions which would permit of proper insurance ; and
- (iii) the establishment where possible and advisable of properly-regulated forward markets permitting of "hedging" and thus the mitigation of violent market fluctuations.

It is therefore satisfactory to note that an agreement has been reached with the principal trade associations for standard future contracts for wheat and linseed, and that discussions are well advanced in regard to standards for groundnuts and coffee. Equally to be welcomed is the progress now being made in several provinces with legislation for the setting up or improvement of regulated markets. As progress is made with these two items, the consideration of the establishment of more adequate terminal or future markets would be possible. To what extent provinces will, in

future, require assistance from a central marketing staff in this and cognate matters is one of the matters which the Conference will consider.

In conclusion let me again say how great a pleasure it is to me to welcome you here today, and how entire is the confidence I feel that your labours in this Conference will contribute in substantial degree to the promotion in India of orderly and efficient marketing of agricultural produce, an object of the utmost importance both to the cultivator and to the people at large.

After His Excellency's departure, the proceedings of the Conference continued under the chairmanship of Kunwar Sir Jagdish Prasad, Chairman of the Imperial Council of Agricultural Research.

BETTERMENT OF THOSE ON THE LAND

VICEROY'S PRACTICAL INTEREST

SIR JAGDISH PRASAD'S SPEECH

The Hon'ble Kunwar Sir Jagdish Prasad, Member for Education, Health and Lands, in asking His Excellency to open the Conference had said previously :—

"My Department has ventured to make frequent demands on Your Excellency's time because we are assured of Your Excellency's warm support and lively personal interest in all measures designed for the betterment of rural India.

We are indeed fortunate that Your Excellency has been pleased to accept our request to open this most representative conference so soon after Your Excellency's return to the burden and cares of your exalted office, as on the subject of agricultural marketing Your Excellency can speak with unquestioned authority. It was largely as a result of the Report of a Departmental Committee over which Your Excellency presided in 1923 that the Markets Branch of the British Ministry of Agriculture was formed in 1924.

Your Excellency was Chairman of the Market Supply Committee in Great Britain from 1933 to 1936. Your Excellency's labours have left a permanent mark on the history of agricultural marketing in England, and it is to the Royal Commission on Indian Agriculture, over which Your Excellency presided, that we owe the first serious attempt on the part of the Government of India to study, with a view to improvement, the marketing of agricultural and animal products in this country.

In 1934 the Government of India gave a grant of about Rs. 26 lakhs to provide the cost of a Central Marketing staff for a period of five years and to enable grants aggregating Rs. 10 lakhs to be given to the Provinces by the Imperial Council of Agricultural Research. It was in January, 1935, that the new organisation began to function.

The Central and Provincial marketing staffs have thus been in existence for less than 4 years. The problems which they have to face are more intricate and of wider range than those of Western Europe and America by reason of the numbers involved, the indebtedness and ignorance of the producers, their lack of organisation,

the difficulties of rural finance, the comparatively primitive nature of rural communications, and rural transport, the chaotic condition of the markets with a multiplicity of weights and measures and a varied host of middlemen, some necessary, others superfluous, that encumber the road from the producer to the consumer.

There is little doubt that enormous waste is going on between the price obtained by the producer and the price that the consumer has to pay. Our agricultural statistics are notoriously deficient.

It is not possible for me to vouch for the absolute accuracy of some of the figures which I quote, but according to some recent estimates, for wheat the producer's share of the consumer's price is about 60 per cent., for rice 50 to 60 per cent. and for fruit considerably less.

While making allowance for a wide margin of error in these figures, there can hardly be any doubt that with efficient organisation, not only should the producer get a better price but there should be a marked improvement in quality. It is indeed a painful commentary on the present state of affairs that even of an article of such great use in India as ghee, a pure urban supply is scarcely obtainable. Adulteration of milk in our towns is notorious.

"A Good Beginning"

Considering the short time during which the Central and Provincial staffs have been working, we may claim to have made a good beginning.

We have made surveys of the marketing conditions of a number of commodities on the lines laid down by the Royal Commission on Agriculture.

We have passed a Central Act to enable certain agricultural products to be standardised, graded and marked.

We have established about 60 grading stations for the grading of fruit, ghee, hides and skins, eggs and tobacco.

We have, in collaboration with the trade, arranged for standard contracts for certain heavy staple commodities like wheat and linseed which enter into the wholesale trade of the country and we have helped in the drafting of provincial legislation for the regulation of markets.

So far the value of the commodities we have graded is only Rs. 20 lakhs, a mere drop in the ocean, when the value of ghee alone is between 80 and 100 crores of rupees. We have yet to do much to organise the producers, whose interests must remain paramount, so that they may be able to bargain on more equal terms with the better organised distributors and consumers of their produce and may be able to get the full premium for quality and purity of their produce. The task before us is difficult and requires patient and persistent effort over a number of years before we can make our agricultural marketing organisation up to date and efficient.

The presence this morning of Hon'ble Ministers from autonomous provinces and from Indian States, to whom I wish to extend a warm welcome, and the significant fact that a Viceroy with such expert knowledge of agricultural problems both in this country and in England is here to mark the importance of this occasion makes me hopeful that our deliberations will be fruitful and that we will be able to devise, and what is much more

important, put into force as circumstances permit, effective measures to secure for the producer a more adequate return for his produce, to the distributor a reasonable remuneration, and to the consumer a regular supply of commodities of assured quality at reasonable prices. The objective, I believe, is to improve the essential services and to eliminate the non-essential, without injustice to any interest or class."

CO-ORDINATION AND LEGISLATION CONFERENCE CONCLUSIONS

It was agreed that the various marketing reports have shown the value of the surveys of producers and that all the provinces and States should continue to co-operate to maintain steady progress throughout the whole of India in encouraging improved marketing of all agricultural commodities.

The importance of the marketing surveys was fully appreciated during the discussions as enabling an estimate to be made of the potential gain to the producer by an improvement of marketing methods and as giving a cross-section of the country's economic activities, thereby enabling agricultural production to be considered in relation to Indian trade and industry.

It was unanimously agreed that the commodity marketing surveys should be continued to be planned and compiled on an all-India basis. The production of a particular commodity, it was admitted, might be of special importance to a single province though its demand and consumption might affect all provinces and States. The province particularly interested in such a commodity might undertake its survey, but the Central Marketing staff should be called upon to give assistance. It was agreed by all the Provinces and States that they would also be ready to help in the completion of such surveys.

The Conference was unanimous in recognising the great value of grading, marking and packing stations. This has been clearly brought out in the case of ghee, fruits, eggs, hides and skins and similar commodities.

Standard contracts constitute a form of agreement between the various trades associations to do business on a common basis. Their great value for the heavy staples like wheat, linseed, and groundnut, was emphasized. The conference thought that the question of giving statutory authority might be considered, if necessary.

Considering the question of regulated markets, the conference agreed as to the necessity for the standardizing of market charges, reducing the number of payments in kind, licensing of persons entitled to levy charges, and the standardizing of market practices in regard to the weighing, sampling, grading and sale of produce. There was complete agreement that the provinces should take up the question of the regulation of markets in regard to these matters and that provincial marketing acts should cover all agricultural and animal husbandry produce, both in the producing and the consuming centres. The Imperial Council of Agricultural Research had already supplied to the provinces full information as to the points to be covered in any legislation in this respect. Legislation exists at present in certain provinces while others are either contemplating fresh legislation or amending the existing acts.

The Ministers emphasized the importance and urgency of central legislation in the matter of standard weights. They are all agreed that immediately the central legislation is passed, the provinces and States should introduce complementary provincial legislation and undertake whatever administrative steps might be necessary for implementing it and also legislate provincially for the standardization of measures.

It was resolved that the central marketing staff should be responsible for the collection and dissemination of information regarding prices, supplies and stocks in the important markets for those commodities which figure prominently in the trade of India as a whole. The provincial and state marketing staffs would be responsible for the collection and recording of commercial prices for their local commodities, particularly prices in the key markets, and for the dissemination of market news to smaller country markets and producers in rural areas.

There was an interesting discussion in this connection on the future use of the radio. The Secretary for the Communications Department gave a full account of the work that has already been done, what the Government is at present doing and what they hope to do in the future. Useful suggestions were made about various points like the language, phraseology and timing of the broadcasts.

Dealing with the general question of the elimination of physical waste, the conference reached the important conclusion that every province and State should examine the possibility of more rapid assembling of perishable produce in the villages by the organization of collecting agencies which should operate on standard methods of grading and marking. The need for this has been clearly brought out in the egg marketing survey.

Considering the question of reduction in price risks, it was recognized that depressions in price levels of agricultural produce at harvest time was a world characteristic. Organised futures markets like the East India Cotton Association and the Karachi Cotton Association reduce price risks while purely speculative futures trading increases them. There was complete unanimity on the necessity for doing everything possible to discourage purely speculative bodies, which not only depress the prices but also lead a precarious existence.

With regard to the question of adulteration, the conference considered that there was need for a special examination of the provincial food laws and a greater need for administering them more thoroughly in the rural areas and mofussil towns.

In the matter of co-ordination of effort between all the Departments and agencies interested in the improvement of marketing in each province and State, everyone agreed that there was need for a Standing Agricultural Marketing Committee. Such Committees already exist in some provinces. The precise form of organisation would naturally be adapted to local requirements.

The conference resolved that in each Province and State particular attention should be given to the initiation of schemes to encourage the production of those types of produce which are

mainly in demand and which are best suited for commercial development, and that the production of those commodities for which the marketing surveys have shown openings to exist, should be encouraged. Following up the production side of the results obtained from the marketing surveys, attention was drawn to the 'land planning' projects which are now becoming a common feature in America. The Ministers proposed that the Imperial Council of Agricultural Research should constitute a standing committee, which might be called the Crop Planning Committee, to study these questions.

The financial and administrative aspects of these recommendations were discussed. Here more detailed examination will be necessary by the central and provincial Governments.

PIONEER WORK

DRUG MANUFACTURE IN INDIA

The Medical Stores Department has done pioneer work in the manufacture of drugs in India.

There are many preparations which are made exclusively by the Department. For example, in Madras are made the four preparations of Oleum Hydrocarpus, used in the modern treatment of leprosy, and it is believed that this is the only source in India from which these preparations can be procured at a reasonable rate.

There are four Medical Store Depots located at Madras, Bombay, Calcutta and Lahore, administered by the Director-General, Indian Medical Service, on behalf of the Government of India, Defence Department.

The depots were originally established to ensure the supply of drugs, instruments, and appliances, of uniform quality and pattern for the Army in India. In the course of time their sphere of activity was extended and the civil medical institutions turned to them as the most reliable source of supply.

The stores were at first only distributing centres. It was, however, discovered that some of the drugs could be more economically manufactured in India than imported and in consequence Depots undertook pioneer work in manufacturing. The number of items manufactured gradually increased, especially during the War, and now there are at the Madras and Bombay Depots two modern and up-to-date factories, employing Indian labour capable of supplying all Government institutions in India with drugs and preparations of British Pharmacopoeia standard.

At each of these factories there is employed a highly qualified advisory chemist, whose duties include the analytical examination of every preparation made in the Depot factory and all supplies received from outside to see that they are up to the prescribed standard.

As soon as it is found that a preparation of the required standard can be obtained in India at a rate not more than the cost of manufacture in the Depots, the manufacture of that particular item is discontinued and it is purchased locally. More than half the amount provided for purchase of stores is in this way spent on purchases made in India. Stores worth Rs. 11,52,131 were imported in 1936-37, while stores worth Rs. 14,14,796 were purchased in India during the same period.

It is not the policy of the Government of India to compete with private enterprise, nor is it the intention to make a profit from the Medical Stores Department, although it is desirable that it should be as nearly self-supporting as possible. Private institutions are not encouraged to obtain their supplies from the Depots, but the experience of the past has proved that the Department was able to make good the deficiencies required for civil purposes which were due to the failure or irregular supply of imported drugs.

The Medical Stores Department therefore fulfils a useful and necessary function, which could in a time of crisis become vital.

INDIAN INDIGENOUS DRUGS

USES LIMITED

Only a limited number of indigenous remedies deserve their repute as cures; a large proportion of them are worthless and have probably crept in through tradition and folklore.

This is one of the results of an important research undertaken to investigate on scientific lines the claims of the Ayurvedic and Unani systems of medicines which was financed by the Indian Research Fund Association.

During the last twelve years this enquiry has resulted in a considerable amount of work which has not only received local appreciation but international recognition. The Departments of Pharmacology and Chemistry of the School of Tropical Medicine, Calcutta, are now considered an authority on all questions in connection with the chemistry, pharmacology and therapeutic uses of the Indian indigenous drugs.

It has been found that many of the pharmacopoeial drugs or allied species grown in India which could be used in the manufacture of pharmacopoeial preparations are already in common use.

PREVENTION AND CURE OF DISEASE

CO-ORDINATION WANTED

The activities of those responsible for medical relief and prevention of disease are so closely inter-related that it is impossible to draw any sharp distinction between them, and the consequent necessity for co-ordinating Government Medical and Public Health Departments is being increasingly felt.

The Central Board of Health at its first meeting passed a special resolution which stressed the need for co-operation between these two departments; and recognising the important position which prevention occupies in every phase of medical practice, both the Medical Council of India and the General Medical Council of Great Britain

recommend that "throughout the whole period of study the attention of the student should be directed to the importance of the preventive aspects of medicine."

In most countries all branches of medicine are administered by one Health Ministry with separate higher directing staffs, but India is peculiar in the extent to which in some areas the activities of medical and public health departments have been separated or in a few cases even divorced from each other.

The prevention of disease has come to be universally recognised as being the chief aim of medical work and most of the administrative medical officers are now enthusiastic advocates of disease prevention; indeed some of them have been specialists in public health for the greater part of their previous service. All of them state that they are prepared to co-operate with the Directors of Public Health and to insist on this co-operation on the part of the members of their staff.

This combination of effort does not mean the swallowing up of one department by another, but only that whenever it is in the interests of efficiency and economy, the medical man ought to engage both in medical relief and public health work.

While a satisfactory degree of liaison exists between the Directors of Medical and Public Health Departments, it is in the districts, in the sphere of the Civil Surgeon and the District Health Officer that health presents its most important problems and where there is the greatest need of co-operation. Separate higher directing staffs technically qualified, co-ordinated by an administrative head, are essential for efficiency, but when we come down to smaller district units, such as the village dispensary, it is certain that India can never afford to maintain two experts for each small centre of her population.

As long as the ideal is unattainable for financial and other reasons, the most promising line to follow is that of the District Health Bureau, recommended and outlined by the Central Health Board, on which the Civil Surgeon and the public health expert of equal standing can co-ordinate all their activities.

Further the dispensary doctor must be brought more intimately into the local health picture and his usefulness increased by improving the teaching of hygiene and public health in medical schools and colleges. In their knowledge of the people and the confidence in them, gained by frequent contact, the Civil Surgeon and the dispensary doctor are valuable assets which should be fully utilised.

VILLAGE WELFARE ASSOCIATION

Sir Gilbert Jackson has been appointed Honorary Secretary of the Indian Village Welfare Association (United Kingdom), in place of Miss Caton, who has resigned as she is now working in India. Sir Gilbert Jackson is a retired Judge of the Madras High Court.

The Association, it is understood, is shortly going to publish, for distribution in India, three pamphlets by Mr. C. F. Strickland on quinine, debt relief and the consolidation of holdings.

DEFORESTATION MENACE

Where The Solution Lies

CROP REQUIREMENTS AND FLOOD CONTROL

Discussions At The Central Irrigation Board

There is sufficient evidence to show that India is faced with the grave danger that her river catchments will be denuded to such an extent as to increase floods during the periods of heavy rainfall, decrease river supplies for irrigation and navigation during the dry season, increase siltation of the rivers, and throw large areas out of cultivation.

This was the conclusion reached by the Central Board of Irrigation on the problem of deforestation menace and soil denudation, when it met in Delhi for its ninth annual meeting.

It was unanimously agreed that immediate action was called for. Steps had already been taken in some parts of the Punjab and the United Provinces in an endeavour to stop further denudation and to set right the damage that had been done, but the Board considered the work already in hand to be a small fraction of what was necessary.

After discussing the methods adopted in the Punjab, the United Provinces and also in America and Africa, the Board concluded that no hard and fast rules or standard methods could be laid down for all areas, as local conditions were an important factor.

The Forest Department are extending their activities along the line of co-operation with villager, although, strictly speaking, some of the work is not the concern of that Department. The whole problem is bound up with livestock management, and the control of grazing is one of the important steps to be taken. In some areas it was found that cutting grass for cattle instead of allowing them to graze on it, resulted in greater yield, and in Hoshiarpur, for example, the work initiated by the Forest Department, is self-supporting, since there is a ready market for the grass.

The Board concluded that the only way to tackle the problem was for small local schemes, such as those started in Hoshiarpur and Etawa, to be taken up in all areas where denudation was an accomplished fact or was threatened.

Power From Canals

The development of power from canals for domestic, commercial and agricultural purposes and for the extension of irrigation, was one of the many other problems discussed by the Board.

Mr. Walton, Hydro-Electric Engineer, United Provinces, who attended the meeting, explained to the Board that the economics of such schemes was greatly affected by the nature of the load. For irrigation purposes, such as pumping from tube wells, the hydro-electric plant on the canal falls was suitable by itself, but as soon as domestic and industrial loads were introduced, thermal standby installations had to be provided. The position in the United Provinces now is that the thermal plant is generating the normal load and the hydro-electric plant met the peak loads.

Mr. Walton further explained that the load on the United Provinces grid was steadily building up, particularly the industrial load associated with agriculture, such as vegetable ghee and straw board factories. Part of this development was unforeseen, and it is evident that the introduction of the power is responsible for the establishment of factories which would not otherwise have been established.

After discussing the question of inter-provincial power development, the Board concluded that except where the source of power was near the borders, it was not generally economical to transmit power to other Provinces, and that it was a short-sighted policy to assume that because the interests of a Province were mainly agricultural it could spare electric power for other areas.

Crops' Water Requirements

The water requirements of various crops were discussed. The problem is one which has engaged the attention of Irrigation and Agricultural Departments for a considerable time and a large number of investigations have been carried out. In general the Irrigation Department have aimed at the maximum yield of crop per cusec of water, whereas the Agricultural Department tend to aim at the maximum yield per acre of land.

Some investigations are now in hand to ascertain the best crop rotations for the supplies of water normally available to the cultivator, and the Board considered it advisable for similar investigations to be instituted in all areas where different climatic and economic conditions were likely to affect the problem. The Board considered it essential for experimental farms to be separate from demonstration farms, and for the latter to be provided with no more than the normal water supply.

Attention was also paid to the problem of floods in Bengal. At a conference held in Calcutta during the last monsoon, a proposal was made that a river commission be set up to investigate the problem of floods in the Ganges and Brahmaputra river valleys. The Central Board of Irrigation considered this proposal and concluded that, from the information before it, it was not in a position to give an opinion on the necessity for the commission, but recommended that the proposal might be discussed at a meeting of representatives of all the Provinces concerned.

Flood Control

From the discussion on "The Role of Reservoirs in Flood Control" arose the question of collection of information on river and rain gauging in large river basins such as the Ganges, which extend over several Provinces and States, and the Board considered it necessary for some agency to be established for the collection of data and co-ordination of gauging work in the Provinces and States concerned.

Discussion on "Drains in Irrigation Areas", revealed much diversity of opinion and the Board decided that it was necessary to collect more information before any decision could be reached as to whether drains in irrigated areas fulfilled the purpose for which they were intended. Instances of both successful and unsuccessful drains in various Provinces, notably in the United Provinces and the Punjab, were quoted.

During the discussion on the design of canal falls the question was raised as to how the design of a fall could best be judged, and as a badly designed fall results in heavy expenditure on repairs, it was emphasised that low material cost might mean heavy recurring expenditure in repairs. The Board concluded that the most satisfactory design of a fall was one which, while meeting requirements satisfactorily, cost least in terms of capital cost plus capitalised cost of repairs.

Self-healing Properties

On the problem of staunching canals by converting previous calcium clay in the bed and sides into impervious sodium clay, some doubt was expressed as to the lasting qualities of this type of lining. But it was stated that no deterioration had taken place in the linings so far constructed, and that even where animals had punctured them by walking through the channels, the sodium clay had shown self-healing properties.

As regards other linings for canals the Board was informed that from the most recent experiments on a length of the re-inforced brick tile cement "sandwich" lining adopted for the Haveli Main Canal, the leakage through it was found to be nil. Unless some special provision was made for preventing it, a canal lining would blow up, due to the pressure of sub-soil water, when the canal was emptied, where it ran through an area with a high water table.

On the Haveli canal, a short length of which runs through an area with a high water table, provision for regulators has been made so that water is kept standing in that short length when the rest of the canal is empty. This will counteract the pressure beneath the lining and prevent it from blowing up.

Canal Lining Economics

The Board discussed the economics of the construction of lined canals for curing and preventing waterlogging and for conserving water, and came to the conclusion that as at present there was little reliable information about the quantities lost by seepage from canals, and the effect of those losses on the water-table, it was impossible to say in general that it was an economic proposition to construct lined canals or to replace existing earthen channels by lined ones.

On "The Policy of Irrigation in India, with particular reference to Future Development and Finance," the Board was informed that investigations were in hand in two or three Provinces to ascertain the extent of the indirect revenue accruing to the Central and Provincial Governments from irrigation projects.

While the Board was assembled in Delhi news was received of the death in England of Colonel Clibborn, who was one of the pioneers to investigate in India the problem of the flow of water through sand. These investigations have since led to a solution of the problem of the design of weirs on permeable foundations. The Board passed a resolution of condolence.

For the ensuing year Mr. A. Gordon, C.I.E. (Sind) has been elected President of the Board, and Mr. S. H. Bigsby, C.I.E. (Punjab), Vice-President and Mr. T. M. Lyle (United Provinces), third member of the Executive Committee. Mr. A. R. B. Edgecombe (United Provinces), was appointed Secretary to the Board for four years from May 1, 1939.

DO BUSINESS MEN

ANSWER LETTERS ?

To standardize business reply postcards and envelopes, the Indian Posts and Telegraphs Department have prepared specimen copies with black vertical lines near the right hand edge.

Reply postcards and envelopes are being increasingly used by the business men who, in the absence of a standard layout, have been adopting different designs.

The diversity of the designs now in use has also led to difficulties in sorting in the post office. After consulting the various chambers of commerce and trade associations, the Posts and Telegraphs Department have decided to prescribe a standard design for business reply postcards and envelopes.

Specimen copies will be issued to firms applying for permission to use this system and also to those already using it. The design will be reproduced in a postal notice for the information of the public.

Future applicants for permission to use this business reply system will have to use the standard design and those who are already in possession of permission will have six months within which to adopt it. The users will have full liberty as regards the size and colour of printing of their stationery.

INSURANCE EXPANDS IN INDIA

Indian Enterprise At Home And Abroad

DIVIDENDS : BONUS : MANAGEMENT : ASSETS

Report Of Assistant Actuary To The Government Of India

What is the proportion of the Indian Companies' premium income on life business spent on management? What dividends are paid to shareholders and bonus to policy holders? What is the financial position of the companies as disclosed by their actuarial valuations? What are the deposits made by these companies? What are the assets of the companies and how are their funds invested? What is the business other than life assurance which is transacted in India and how is it divided between Indian and non-Indian companies?

Answers to these and other questions of vital consequence to the interest of the rapidly growing number of Indian policy-holders, are to be found in the facts and figures appearing in the "Indian Insurance Book, 1937", just issued.

The large expansion of the business during the last decade is shown by the fact that the total business remaining in force with Indian Life Offices at the end of the year 1927 was Rs. 60,00,00,000 and at the end of 1936, it was Rs. 175,00,00,000. The total new sums assured by the offices in 1936 amounted to nearly Rs. 38,00,00,000; the largest of any of the previous ten years. Again, the total life assurance income of Indian companies was Rs. 4,29,00,000 in the year 1927; and Rs. 11,35,00,000 in 1936 exceeding the preceding year's income by over two crores.

The total number of Indian Life Offices which are subject to the Indian Life Assurance Companies Act is 213—of these, 178 are proprietary and 35 mutual.

The number of companies which are subject to the provisions of the Indian Life Assurance Companies Act of 1912 and the Indian Insurance Companies Act of 1928, is 379. Of this total 232 are constituted in India and the rest abroad.

Provinces' Share

Considered by provinces—Bombay heads the list with 69 companies; Bengal is second with 50. Other provincial figures are: Madras, 41; the Punjab, 30; the United Provinces, 12; Delhi, 10; the Central Provinces, 5; Bihar, 4; Sind and Ajmer-Merwara, 3 each; Assam and Burma, 2 each; and the North-West Frontier Province, 1.

Since the publication of the previous "Year Book", Bombay and Bengal have added two companies each to their numbers; and the Punjab and Madras, one each. Of these six new companies formed during the year, two companies have commenced life assurance business under the Indian Life Assurance Companies Act.

The total new life assurance business (excluding that on the dividing plan) done by Indian companies in India during the year 1936 was 239,000 policies assuring a sum of Rs. 36,00,00,000 and having a premium income of Rs. 1,84,00,000, out of the total Indian new life assurance business of 273,000 policies, assur-

ing Rs. 46,75,00,000 and yielding a premium income of Rs. 2,41,00,000.

The total life assurance business effected in India by Indian companies and remaining in force at the end of 1936, was 989,000 policies, assuring a sum of Rs. 1,68,00,00,000, and having a premium income of Rs. 7,87,50,000, the grand total including foreign companies being 1,261,000 policies, assuring Rs. 2,61,00,00,000, including reversionary bonus additions and having a premium income of Rs. 13,00,00,000.

Indian Enterprise Abroad

Some Indian Life Offices have extended their operations outside India, mostly in British East Africa, Ceylon and Straits Settlements. The total new sums assured by these offices outside India in 1936 amounted to Rs. 1,80,00,000 yielding a premium income of Rs. 11,00,000. The total sums assured including reversionary bonus additions remaining in force at the end of 1936 amounted to Rs. 7,00,00,000 having a premium income of Rs. 36,50,000.

Most of the Indian companies carry on life insurance business only, while most of the non-Indian companies carry on insurance business other than life. There are 185 Indian companies carrying on life assurance business only; 28 others combine life assurance with other insurance business; but 19 carry on insurance business other than life.

Out of the 147 non-Indian companies, 122 carry on insurance business other than life, 12 carry on life business only and 13 combine the two kinds of business. Of the latter 25 companies, 16 are constituted in the United Kingdom, 7 in the British Dominions and Colonies and 1 each in Germany and Switzerland.

Of the total new life assurance business effected in India in 1936 (mentioned earlier), the share of British companies is Rs. 4,50,00,000, the Dominions and Colonies, Rs. 5,12,50,000, Germany, 1,00,00,000 and Switzerland, Rs. 12,50,000.

The total net Indian premium income under insurance business other than life assurance in 1936, was Rs. 2,75,00,000. In this amount, the Indian companies' share was Rs. 74,00,000 and of non-Indian companies Rs. 2,00,00,000. The Indian companies received Rs. 36,00,000 from fire

11,00,000 from marine and 27,00,000 from miscellaneous insurance business, while non-Indian companies received Rs. 1,01,00,000 from fire, 41,00,000 from marine, and 58,00,000 from miscellaneous insurance business.

The Indian companies which transact a substantial amount of fire or marine insurance business, also operate outside India. These companies had a net premium income of Rs. 70,00,000 in 1936 from business outside India.

Companies' Assets

The bulk of investments of Indian companies are in stock exchange securities which constitute about 70 per cent of the total assets and amount to Rs. 34,25,00,000 after allowing for an investment fluctuation fund of Rs. 76,00,000 provided for in the balance-sheets.

The total assets in India of non-Indian companies amount to Rs. 49,00,00,000. The bulk of this amount—Rs. 38,00,00,000—represents the Indian assets of companies constituted in the United Kingdom, and Rs. 10,00,00,000 those of companies constituted in the Dominions and Colonies. Out of the Rs. 49,00,00,000, Rs. 44,00,00,000 represent Indian assets of companies which carry on life assurance business in India, either solely or along with other insurance business.

Management And Shareholders

The expenses of management of Indian companies in 1936 was 24·1 per cent of the total income as against 24·8 in 1935. In 1913 the percentage was 18·0.

The dividend to shareholders in 1936 was ·7 per cent as against ·5 in 1935. It was the lowest in 1915, 1919, 1924 and 1930 being ·3, and the highest in 1928 being 1·8.

The life assurance funds increased by Rs. 4,87,50,000 during 1936 and amounted to Rs. 40,25,00,000 at the end of the year. The average rate of interest earned on the life funds during the year after deduction of income-tax at the source, was 4 2/3 per cent.

The net rates of interest realized by the Indian Life Offices were : 1932, 5·38 ; 1933, 5·17 ; 1934, 5·08 ; 1935, 4·93 ; and 1936, 4·69.

It is interesting to note the proportion of claims by death and by survivance over the past several years. In 1913 the claims by death were responsible for 32·9 per cent of the companies' outgo, and those by survivance for only 9·7. In 1923, the figures were : by death, 21·0, and by survivance, 15·7. In 1933, the respective figures were : 13·9 and 13·3 and in 1936, 13·6 and 12·8.

One hundred and sixty-five Life Offices submitted their accounts and business returns for the year 1936 under the provisions of the Indian Life Assurance Companies Act. The Year Book contains the results of the latest valuations of 91 of these Life Offices, a majority of which have undergone more than one valuation. The valuations disclosed a surplus in the case of 72 companies and deficit in the case of 19 companies. The total surplus of these 72 companies amounted to Rs. 4,11,00,000, of which Rs. 3,65,00,000 was allocated to policyholders and Rs. 30,00,000 to shareholders ; the balance was either set aside as

an additional reserve or was carried forward unappropriated. The deficit in the case of 19 companies amounted to Rs. 6,25,000. Of these the deficit in the case of 17 companies, was covered by the paid-up capital, thus proving their solvency but precluding the payment of bonus or dividend. In the case of the remaining two companies, the deficit was not covered by available assets, and they are taking steps to transfer their business to other Life Offices.

Some Indian companies transact life assurance business on the dividing plan under which the sum assured is not fixed but depends on the division of a portion of each year's premium income amongst the claims arising in that year. Most of these companies, according to the Indian Insurance Book, " realized that they could not continue this business for a long time. It is very satisfactory to note that this class of dividing business as well as the other on the call system, has been prohibited under the Insurance Act, 1938. It is accordingly highly essential that those companies which still transact this class of business, should stop it forthwith and consult actuaries with a view to converting their existing business to ordinary life assurance business on sound principles ".

These remarks also apply to the 554 societies registered under the Provident Insurance Societies Act, 1912, and which transact mostly dividing insurance business. Of these 554 societies, 290 are established in Bengal, 47 in Bombay, 60 in Madras, 82 in the Punjab and 26 in Sind, the remaining being scattered all over the other provinces.

The " Year Book " contains a mass of information about insurance business in India, including the revenue accounts of the Post Office Insurance Fund and summaries of revenue accounts and general balance sheets of Indian companies for the year 1936 and for 1937 received mostly till the end of May, 1938.

LOYAL MESSAGES FROM PRINCES

Ninety-eight loyal messages from Princes of the Indian States were received before, during and after the recent European crisis when war seemed possible. They were published, in the order in which they were received, in our issues dated October 1, and November 15.

By a regrettable oversight the following message was omitted.

From The Nawab Of Amb

Compliments. The newspapers show that there is possibility of a war taking place and as it has been the distinguished mark of my predecessors to sacrifice their lives for the cause of the King Emperor, I too have a desire not to be-deprived of this glory. I assure His Excellency the Viceroy and the Governor through your good self that if, God forbid, this Great War takes place and our British Government also takes part in it, then I from now offer myself, wealth, subjects and army ; it would be a pride for me to sacrifice the last drop of my blood for our King Emperor. I hope that this insignificant sacrifice of mine will be accepted.

POST OFFICES' STEADY PROGRESS

A Vast Public Utility Service

LOWER TELEGRAPH AND RADIO DEFICIT

More Village Post Offices

One thousand one hundred and ninety million postal articles handled, Rs. 81,33,00,000 worth of insured articles posted, 40,000,000 money orders to the value of Rs. 76,28,00,000 issued, 2,300,000 effective trunk calls booked, 78,600,000 signal operations performed, and Rs. 23,60,00,000 paid on postal cash certificates discharged—these are some figures that give an idea of the work of the Indian Posts and Telegraphs Department whose annual report for 1937-38 is just published.

The outstanding event of the year was the introduction of the Empire Air Mail Scheme which had been under consideration of the various postal Empire administrations for the last three years. Under this scheme, which was inaugurated on February 27, 1938, all first class mail, i.e., letters, postcards, and money orders, is carried exclusively by air between the participating countries, without any air surcharge. All other articles are carried by the surface routes. There is now a uniform rate of 2½ annas per every half ounce for letters, a substantial reduction as compared with the old rate of 7½ annas per half ounce.

The scheme began with an accelerated service four times a week and later five times a week. The frequency of the internal air services between Karachi and Colombo and between Karachi and Lahore was increased so as to connect both with the inward and outward Europe mails at Karachi.

* More Rural Facilities

To the 648 new post offices opened to extend rural postal facilities in the previous year, 1,243 were added during 1937-38.

All classes of articles, instead of those only fully paid up as hitherto, are now handled by village postmen appointed to replace a number of extra-departmental delivery agents.

A large number of the new post offices do not pay, but the initial loss is borne by the Department for the benefit of the rural inhabitants.

A uniform telegram rate for Empire countries and a general reduction in the Empire telegram charges were decided during the year. The ordinary telegram from India to the United Kingdom was made cheaper by one anna per word. The reduction to some Empire countries was more than two-thirds and substantial in the case of others. The rates came into force from April 25, 1938.

The Letter-Postage rate had been placed on a rational basis at 1 anna for the first tola and half anna for each additional tola or part of a tola in the previous year. In 1937-38 the rate on book, pattern and sample packets was revised and reduced, to the benefit of the business community. This reduced rate can also be utilized to send printed invitations and circulars.

The maximum limit of weight permitted in the case of inland post parcels was raised from 800 tolas (20 lbs.) to 1,000 tolas (25 lbs.)

An air Mail money order service to China, a V. P. parcel service to Zanzibar, Kelantan, Trengganu and Brunei and a parcel post service with Afghanistan were introduced; mail communication with Makalla and Shehr was resumed. The maximum permissible weight of parcels for Great Britain and Northern Ireland was raised from 20 lbs. to 22 lbs.

Pictorial postage stamps, as part of the permanent issue, were introduced for the first time in the history of the Indian Post Office. A complete series of King George VI postage stamps from 3 pies to Rs. 25 was issued.

Four important wireless works were completed during the year: a new medium-wave transmitting and receiving station at Secunderabad and Ahmedabad; at the latter place an Adcock direction-finding station also being constructed; installation of a medium-wave transmitting apparatus and construction of Adcock direction-finding station at Bombay and of Adcock direction-finding stations at Calcutta (Dum Dum), New Delhi and Jodhpur. The departmental wireless stations handled 550,000 messages.

The number of Broadcast Receiver licenses issued rose to 54,000 from 41,000 in 1936-37 and 27,000 in 1935-36.

Eleven Thousand Miles Circuit

The Department's trunk lines are frequently utilised by A. I. R. to broadcast an identical programme simultaneously from several stations. The A. I. R. stations carrying out a simultaneous broadcast are linked up by trunk telephone circuits. The broadcast made by His Excellency the Viceroy from Simla in June, 1937, required a net-work of some 11,000 miles of speech-circuit to be built up. The apparatus of some 23 amplifying stations was controlled, while alternative routes in case of interruptions had to be provided. Some of the important simultaneous broadcasts handled by the Department during the year were the King's Coronation and Empire Day broadcast, the Derby Race, the King's Christmas Message and Lady Linlithgow's appeal for the Anti-Tuberculosis Fund.

Telephone Speed Up

Planning for further expansion continued in the Department's Telephone branch. A multi-channel telegraph and telephone carrier between Bombay and Delhi was opened during the year and that between Bombay and Madras during

the current year. Those between Delhi and Calcutta and between Bombay and Karachi are to be established in 1939. The basic rate of charge for overseas telephone calls to the United Kingdom and the continent of Europe was reduced from Rs. 60 to Rs. 40 for the first three minutes.

Profits increased in the Post Office and Telephone Branches, and losses decreased in the Telegraph and Wireless Branches. The loss in the Telegraph Branch, mainly due to the concessional rates for press Telegrams, was the lowest since 1927-28. Mail Robberies were only Rs. 8,000 in 1937-38, compared with Rs. 30,000 in 1936-37.

The total Post Office receipts were Rs. 7,93,88,458 and expenditure was Rs. 7,46,09,840, leaving a surplus of Rs. 47,78,618 as compared with Rs. 30,79,494 in 1936-37.

The total Telegraphs receipts were Rs. 2,51,68,819 and expenditure was Rs. 2,68,07,839, resulting in a deficit of Rs. 16,39,020 as compared with Rs. 26,03,890 in 1936-37.

Telephones were responsible for Rs. 96,29,816 revenue and Rs. 68,19,585 expenditure, showing a surplus of Rs. 28,10,231 as compared with Rs. 18,98,586 in 1936-37.

Radios caused a loss of Rs. 2,23,962 compared with Rs. 2,41,816 in 1936-37, the total receipts in 1937-38 being Rs. 8,02,510 and the expenditure Rs. 10,26,472.

The result of the year's working as a whole was the largest surplus since 1925-26, namely, Rs. 57,25,867. The surplus in 1936-37 was only Rs. 21,32,374.

The increase in business was due mainly to the generally satisfactory trade conditions that prevailed during the greater part of the year. There was, however, some fall in registered parcel and insured articles business of the Post Office and in inland as well as foreign Telegraph traffic. Telephone traffic, on the other hand, showed continued expansion.

Economies

Owing to the need for strict economy, the expenditure increased only by Rs. 17,50,000, despite the unavoidable additional expenditure of Rs. 10,00,000 due to annual increments to staff, Rs. 7,00,000 due to increase in the pensions bill including repayment of commutations, and Rs. 5,00,000 due to extension of postal facilities to rural and other undeveloped areas.

Economy in staff, quicker preparation and realisation of bills and a more careful check on fraud were secured by establishing a Central Telephone Revenue Accounting Office at Delhi, which resulted in a reduction of staff from 208 to 180 after centralization.

An extended organisation was introduced for all the Department's stores. All stores held in Engineering Divisions were brought under the Controller of Telegraph Stores. The whole system of accounting the value of stores issued to work was revised; this is expected to improve control over the progress of expenditure.

The Electrical Engineer-in-Chief's office at Calcutta improved the apparatus manufactured in the workshops. The Department continued the policy of manufacturing in its own workshops as much of its requirements as is economically

possible. The Telegraph workshops completed work of the value of Rs. 18,69,000 a decrease of Rs. 4,84,000 over the year 1936-37, as a sudden rise in raw materials especially copper brought about a contraction of the programme of work.

Money Orders Up In Value

The 40,000,000 Money Orders of this year amounted to Rs. 76,00,00,000, compared with about the same number of money orders last year to the value of Rs. 73,50,00,000. The commission realised was Rs. 1,04,00,000 (Rs. 1,02,00,000 in 1936-37). Inland money orders decreased by 1.2 per cent. in number but increased by 3.61 per cent. in value. Telegraphic money orders, inland and foreign, rose in number and value, the latter being Rs. 3,94,00,000 as compared with 3,80,00,000 in 1936-37.

Of sterling money orders, 176,557 were sent and received, valued at £884,155. The amount received for payment in India exceeded that advised from this country by £473,243. The largest amount in sterling money order exchange, £222,630, was from Kenya, Uganda and Tanganyika Territory.

Indian Postal Orders grew in popularity. They numbered 747,000 valued at Rs. 18,82,000 against 597,000 and Rs. 13,15,000 in 1936-37.

The average balance at the credit of a depositor in the Post Office Savings Bank was Rs. 204.65 as compared with Rs. 191.10. The total balance at credit of depositors was nearly Rs. 77,50,00,000 representing an increase of 6.84 per cent., though there was a decrease of 0.23 per cent. in the number of active accounts.

The comparatively low rate of interest now offered on cash certificates probably caused a decrease in their sales, and maturity during the year of several series of cash certificates caused an increase in discharges. The amount invested was Rs. 14,00,00,000 as against Rs. 14,68,00,000 in 1936-37.

Government securities of the nominal value of Rs. 10,37,30,000 were in the custody of the Accountant General, Posts and Telegraphs, on behalf of the depositors at the end of the year.

Life and Endowment Assurance Policies numbering 4,294 of the aggregate value of Rs. 89,48,000 were issued.

The number of greetings telegrams rose from 154,651, in 1936-37 to 155,208 in 1937-38. Coronation letter-telegrams numbered 1,490 containing 28,514 words.

Every day 102 articles on the average were posted with no address in areas served by the Calcutta, Bombay and Madras Dead Letter Offices. The articles received in the Dead Letter Offices contained cheques, currency notes, bills of exchange, coins and other property to the aggregate value of over Rs. 7,00,000 within a single year, 1937-38. It was, however, possible to deliver a large proportion of them to addressees or senders.

As many as 5,830,000 (5,254,000 in 1936-37) postal articles reached the Dead Letter Offices, but not in more than seven articles in every ten thousand given out for delivery in the Post Offices had the Offices to accept defeat and deposit them as finally dead.

INDIANS IN SOUTH AFRICA

Transvaal Land Tenure Acts

A STEP FORWARD

Agent-General's Report

That the Transvaal Asiatic Land Tenure (Amendment) Acts, 1936 and 1937, were received with satisfaction in responsible Indian circles in Transvaal and regarded as a substantial step forward is revealed in the Report of the Agent-General for India in the Union of South Africa for the years 1936 and 1937, just published.

By far the most important event of the period affecting the Indian community in the Union, the passing of the Act completed the legislative work, implementing the policy enunciated in 1932, when a Commission was appointed under the chairmanship of Mr. Justice Feetham to enquire into the facts of "coloured occupation" in the Johannesburg gold-mining area and to make proposals as to the exercise of the power conferred upon the Minister of the Interior to withdraw land from the operation of the Gold Law prohibitions against coloured occupation. The Agent-General and his Secretary attended the meetings of the Parliamentary Select Committee set up to consider the bill based on the proposals of the Commission and also gave evidence before it.

By the provisions of the Act as passed, a Municipal Council is now empowered to alienate or transfer land to Asiatics in any area set aside for the purpose and to allow Asiatics to acquire ownership of or other interest in such land, subject to authorisation by a resolution of both Houses of Parliament. The Minister of the Interior is further empowered to exempt land from the operation of the Gold Law regarding residence on or occupation of that land by coloured persons. He may also in certain areas allow coloured traders in illegal occupation of land to continue in occupation. Finally, the Act makes provision for measures to ensure that there is proper municipal administration in areas reserved for occupation.

While the Act gave general satisfaction, a small minority complained that principles had been sacrificed for immediate gains. No adverse criticisms, however, appeared in the South African press.

Asiatics In Reef Areas

It was expected, says the Report, that Parliament would during 1937 deal with the recommendations of the Feetham Commission concerning the exempted areas of Johannesburg, where the evil of rack-renting was most noticeable, but no resolution was introduced.

During the session, however, a Bill introduced to amend the Act of 1932, and since passed, extended the protection in respect of illegal occupation of land by Asiatics in the Reef areas of the Transvaal up to April 1, 1939, by which time, it is anticipated, the Parliament will have dealt with the recommendations of the Feetham Commission. It also replaced the Feetham Commission by a permanent standing committee of officials, and this Committee was constituted in the course of the year.

A number of Bills, some definitely anti-Asiatic and others affecting Indian interests generally, were introduced in 1937. Of these, the Mixed Marriages Bill, the Provincial Legislative Powers Extension Bill and the Transvaal Asiatic Land Bill belong to the first category. These were all private Bills; the first to prohibit marriages between Europeans on one hand and Asiatics and Natives on the other; the second to empower Provincial Councils to prohibit the employment of Europeans by certain non-Europeans; and the third to prohibit the ownership of property in the Transvaal by European and coloured wives of Asiatics.

Mixed Marriages

An official announcement was made in May 1937, that two Commissions would be appointed to investigate the problems of mixed marriages and of the acquisition of land by Indians in areas outside the purview of the Gold Law. Representations against the proposed appointment were made both by the Government of India and by their Agent-General, but proved unavailing, and the Commissions were appointed in February, 1938. The work of the Mixed Marriages Commission is not expected to be of much practical importance to the local Indian community, as such information as is available goes to show that mixed marriages are rare among Indians in South Africa. On the other hand, the enquiries of the Land Commission are likely to be of importance.

Representations were also made both by the Government of India and their Agent-General against the Provincial Legislative Powers Extension Bill. As a result, the second reading, which would have involved the acceptance of the principles of the two measures, was not proceeded with and the Bill was referred to a Select Committee for investigation. The Committee submitted an amended Bill which was purely an anti-Indian measure and both the Government of India and the Agent-General protested strongly against it.

Anti-Indian Bill Dropped

In the course of oral evidence before the Select Committee, a representative of the South African Indian Congress stated that he believed Indians would be willing to terminate employment of European women voluntarily where circumstances showed that particular exception might be or had been justifiably taken to such employment.

The Union Government accepted this statement as an assurance of co-operation by the Indian

community in objectionable cases, and an announcement was made in the Union House of Assembly dropping the Bill. The Union Government, however, reserved the right to undertake legislation later, should circumstances appear to demand it.

As regards the other Bills, the Agent-General and the South African Indian Congress made representations to the Union Government for the safeguarding of Indian interests. Particular mention may be made of the Marketing Bill which provided for schemes for control of agricultural products. It contained a sub-clause to the effect that only Europeans would be allowed to vote at meetings of producers called by the Minister to discuss and vote on the merits of any particular scheme. A written assurance has, however, been given by the Union Government that the Act would not be so administered as to affect prejudicially the interests of Indian agricultural producers and distributors.

No Expropriation Of Indians

Another Bill of importance was the Unbeneficial Occupation of Farms Bill. The Bill provided for the appropriation of land, the produce from which was insufficient for the livelihood of persons residing thereon. Apprehensions were aroused that the Bill might be used to expropriate Indian farmers from valuable agricultural land coveted by Europeans. Representations were accordingly made to the Minister for Lands who gave an assurance to the Agent-General that he would consult the latter before taking any action under the Act. He gave further assurances to the Congress that there was no intention of applying the provisions of the Bill to any but Europeans and that should the remote possibility occur of Indians being expropriated, no steps would be taken until the question of future provision for the owners to be expropriated had been settled.

The Agent-General and the South African Indian Congress were successful in obtaining the withdrawal of an objectionable clause from the draft Durban Corporation Extended Powers Ordinance of 1936, which made it possible for owners of land in Durban to declare in perpetuity that their land shall not be transferred to Indians or to any other class of persons.

Indian Cane-growers

World conditions in 1936 necessitated legislation to control the protection of sugar in South Africa. Accordingly millers and cane growers in Natal arrived at an agreement which was embodied in a Sugar Act, passed by the Parliament. It was, however, found impracticable to allow Indian cane growers to be represented on the Sugar Association or Central Board controlling the industry. For, while Indian cane growers far outnumbered the European cane growers in Natal, they produced only 10 per cent. of the cane. A further difficulty was that the Indian cane growers were not organised and there was no single body to voice their opinion.

Assurances were, however, obtained both from the Union Government and the Sugar Association that Indian representatives would be consulted if any matter affecting Indian interests was under discussion. The negotiations over this Bill made Indian planters realise the necessity for organising and as a result the Natal Cane-Growers Association was created. Also, as a

result of the representations made by the Agent-General and the South African Indian Congress, surplus cane belonging to Indian planters was accepted by the mills for crushing both in 1936 and 1937, thus relieving the small Indian cane grower from the adverse affects of the restriction on sugar production.

Slums Act Administration

An assurance of importance was obtained on the administration of the Slums Act, which chiefly affects Indians in Durban, Pietermaritzburg and Johannesburg. The responsible Minister declared in 1936 that he would not agree to any scheme of slum clearance until provision had been made for rehousing the people dispossessed of their homes. Little progress was, however, made in the following year in the schemes for removing Indian slums in these cities. Only an allotment of £8,600 was sanctioned in Durban by the local Council for a sub-economic scheme of fifty houses, while the Johannesburg City Council considered a recommendation for the establishment of non-European township and for clearing the Malay location.

Resolutions recommending residential segregation of non-Europeans were, however, passed by certain municipalities in 1936 in Natal. An agreement was arrived at between the South African Indian Congress and the Natal Municipal Association whereby the Association undertook to bring to the notice of the South African Indian Congress any case in which an Indian endeavoured to purchase property in a European residential area and the European community opposed it, and the South African Indian Congress on their part undertook to endeavour to dissuade persons concerned from effecting the purchase.

Motions to prevent Indian penetration into European residential areas were, however, introduced in the following year, both in the Natal and the Cape Provincial Legislative Councils.

In 1935 the Union Government decided to set aside £5,000 per annum for relief of indigency among Indians. As a result of negotiations, the Minister approved the proposal that in the case of indigent Indians who are blind or suffering from serious bodily infirmity, sympathetic consideration would be shown and the age limit of 65 not insisted upon.

The total number of Indians who took advantage of the Assisted Emigration Scheme during the two years, was 430 and 232 respectively as against 592 during 1935.

POST OFFICES' PROGRESS

(Continued From Page 231.)

This is the first report published since the separation of Burma and Aden from India and is in many ways a complete departure from the past. The old official form has been abandoned, the printing has been improved, the report is divided into chapters, written in popular style, many graphs have been introduced, and an index has been provided. The report is illustrated as usual but the price has been reduced from Rs. 2-4-0 to As. 8.

INDIA'S PART IN WORLD TRADE

Culmination Of Long Recovery Period

FORCES LESS AMENABLE TO RATIONAL CALCULATION

Review Of Trade Of India In 1937-38

The world trade situation in relation to India, the direction of trade in relation to the British Empire and foreign countries, the seaborne trade of maritime Indian States, balance of trade and movement of treasure, and trade in cotton manufactures, piecegoods, artificial silk, iron and steel, mineral oils, paper, paste board, hardware, sugar, precious stones, jute, tea, cotton, hides and skins, food grains, wool and coal are surveyed comprehensively in the Review of the Trade of India in 1937-38, just published by the Economic Adviser to the Government of India.

India witnessed the culmination of a long period of recovery in world trade, world production and the international price level in 1937-38. Rapidly expanding production and equally growing optimism had marked 1936. The outlook in the beginning of 1937 appeared bright, for the re-armament policy promised a large growing demand for both material and finished products. This demand grew so rapidly in 1937 that fears of acute shortage began to be expressed.

This boom phase was, however, of short duration. The price level attained a maximum in April 1937. Thereafter it fell rapidly till June and declined again sharply and continuously from September to the end of November. After a temporary rally it continued its downward trend, though not so sharply, till the middle of June 1938. Since then the trend was decidedly upwards, though it is not yet possible to decide whether that month will mark a real turn in the cycle of prices and of activity.

The year 1937, on the whole, was an undoubtedly prosperous one for the primary producers owing to a combination of high prices and increased output and sales.

The trade cycle which ended in 1937 showed certain marked differences from those of the past. In the leading money markets cheap money prevailed throughout the recovery phase. There was no pressure upon the cash reserves of the banks and money did not become dearer as is usually the case during normal trade cycles.

Another characteristic feature of this trade cycle was the activist intervention of the State. This policy of intervention exposes the institutional framework of society to forces much less amenable to rational calculation than was the case in the nineteenth and early twentieth centuries.

The Indian Cultivator

In the depression started in 1929, agricultural and raw material-producing countries suffered even more severely than the industrial countries. The Indian cultivator was in sore distress on account of the disastrous slump in agricultural prices. When the upward movement started in 1932-33, the rise in the price of commodities in which he was interested was painfully slow and halting, and it was only in the middle of 1936

that the primary commodities began their definite upward movement. As the year advanced the rise almost became a boom and prices touched a figure which was the highest for many years. But these boom conditions were too artificial to last and April, 1937, witnessed a sudden reversal of the upward trend. There were, besides, unfavourable developments in world markets in primary commodities during this year which seriously affected Indian agricultural conditions. The magnitude of the decline was clearly seen only after the middle of 1937.

The outstanding feature of the year, says the Review, summing up the position of raw cotton, has been the record crop in America and a new record of the world's total crop of raw cotton. This large output came at a time when the boom in the world business conditions had definitely been reversed and a rapid downward movement had started. As a result, prices of raw cotton slumped disastrously during the first six months of 1937-38, and touched new low levels in October. The consumption of raw cotton in the world did not show any marked increase and in the case of American cotton, it was distinctly on a lower level. If it had not been for the American Government's policy of loans to cotton growers and restriction of future acreage, prices would have slumped still further. As a result of this policy, however, the downward movement was arrested and the price of raw cotton rallied to some extent during the second half of the year.

The Review finds that conditions were generally favourable for Jute sowing and germination. But contrary to expectations, the expanded Indian jute production did not put the foreign jute industries out of gear, nor did they reduce the foreign demand for raw jute. As a matter of fact, production of jute products abroad increased and exports of raw jute were therefore maintained on a fairly high level. The quantity, however, was less, but the value was equal to the previous year. The year 1936-37 closed with a rising jute market, while 1937-38 opened with a raw jute market in a fairly active condition. Prices began to fall in May and there were slight fluctuations till in March, 1938, prices were 25 per cent. below the level in May, 1937. The average quotation of jute prices for 1937-38, however, was higher than in the previous year.

Oil Seed Prospects

Oil seeds, like most other commodities, passed from boom to depression. In the beginning of 1937, the oil seed markets were most optimistic, though the level of prices was lower than in 1926. By the end of 1937-38, however, prices had gone down much below their level in February, 1937. Discussing the future prospects of oil seeds and the present price level, the Review finds that the prospects of groundnut are fairly hopeful, in spite of the low level attained in March 1938.

The position of linseed, unlike other oil seeds, was satisfactory. Prices were higher during 1937-38, as compared with the previous two years. There is every indication that linseed will continue in a healthy condition. For the time being, the supply position is fairly short, but the increasing rearmament programmes will mean a larger demand for linseed oil. As shipments from Argentine are expected to be smaller in 1938, the outlook for Indian linseed is more favourable for the coming year.

Wheat And Rice

"The wheat crop harvested in India", says the Review, "during the spring and summer of 1937 was abundant and amounted to 10,800,000 tons, as against 9,800,000 tons in the preceding year. This combined with the better prices obtainable for wheat in the world market encouraged exports from India during the year. Prices of Indian wheat rose considerably during 1936-37 and attained their highest level in April, 1937. Though decreasing after that month, prices were on a fairly high level till October. Thereafter, however, a sharp decline set in."

Exclusive of Burma, India figures as one of the largest (if not the largest) rice-importing countries in the world. She has always purchased a large quantity of Burma rice, varying every year according to the condition of her own rice crop. The good rice crop of 1936-37 in India brought down rice exports to India from abroad, they were only 1,267,000 tons in 1937-38, compared with the much larger figures of previous years. The price of rice in India showed an appreciable improvement in 1936-37 but the larger crop of that year brought about a small decline.

Discussing the industrial conditions of India in relation to trade cycles, the Review says that at the beginning of the year there was hectic activity in the various commodity and share markets. Unbounded optimism and over-confidence led to speculation and the position became unhealthy and vulnerable. As in other parts of the world, a downward movement started in India and gathered force. The Indian industries resisted for some time, but after October, 1937, when the world position deteriorated further, they succumbed to the general depression. Prices of ordinary shares attained their highest level in March 1937, declined in June; rose again in October and thereafter gradually weakened.

The prices of industrial commodities did no move to the same extent during 1937-38.

Prices of iron and steel began rising from November, 1936, and by November, 1937, they had risen by nearly 69 per cent. Prices of coal in-

creased by an even greater percentage. From December, 1936, quotations began to rise and by October, 1937, they had increased nearly 105 per cent. From December, 1937, prices of both these commodities began to decline. Prices of sugar fell till June, 1937, the downward movement having begun at the end of 1935. After June, 1937, sugar prices rose, though not to the same extent as in the case of steel or coal prices. Prices of cotton manufactures have been remarkably steady during the last three or four years. The heavy slump in the price of raw cotton in 1937-38, coupled with the rationalisation in the industry, enabled it to make a substantial profit without increasing its prices to the consumers. The rise in commodity prices in the early part of 1937 had a heartening effect on jute prices and the quotations recorded some increase in April 1937. Thereafter, however, the intrinsic weakness of the industry, as a result of over production and the business recession, asserted itself and prices declined continuously throughout the rest of the year.

Tea Fares Well

Tea in 1937-38 fared well and its near future appears to be fairly bright, as the industry is reaping the reward of a well thought out regulation scheme, in great contrast to the uneconomic and unregulated production and export of the period before 1933. Production and consumption has been growing in the last five years, and in 1937-38 they were nearly double those of 1932-33.

Since March, 1937, the index of cement shares has dropped considerably, though it has maintained a fairly steady rise from the lowest level of August, 1931, till the end of 1936-37. This fall is due to business recession during 1937-38.

Money Market

Starting with a better demand in the early months and consequent expansion of currency to the extent of Rs. 8,00,00,000 against the transfer of sterling securities to the Issue Department, conditions in the money market worsened towards the end of year. Trade was declining and money become unusable. A comparatively low rate of interest ruled the market throughout the year. The Reserve Bank rate remained unchanged at 3 per cent. throughout the year.

The merchandise balance of trade in favour of India amounted to Rs. 15,88,00,000 as compared with Rs. 51,91,00,000 in the previous year, showing a fall of over Rs. 35,00,00,000 due primarily to a great increase in the value of imports. Including transactions in treasure, the total visible balance of trade in favour of India was Rs. 30,24,00,000 in 1937-38, as compared with Rs. 64,90,00,000 in 1936-37 and Rs. 40,52,00,000 in 1935-36. Conditions of trade were not so favourable at the end of the year as in the earlier period, and resulted in the decline in the rupee-sterling rate.

The total value of India's export to all countries, including Burma, in 1937-38 amounted to Rs. 1,81,00,00,000, Rs. 4,00,00,000 less than the preceding year and Rs. 31,00,00,000 more than in 1935-36. The imports showed a remarkable

(Please Turn To Page 237.)

ASSAM'S COAL RESERVES

Over 500,000,000 Tons Available

TURA RANGE POSSIBILITIES

Geological Survey's Findings

That the theoretical considerations regarding the association of coal and petroleum in Assam have not led to any practical results, as it has been found that the search for oil is a separate investigation requiring great local geological knowledge, backed by powerful financial support, is the opinion expressed by the Geological Survey of India on the possibilities of coal mining in Assam.

Considerable public attention has lately been directed to these possibilities mainly for three reasons :—

- (i) the frequent association of coal with petroleum in Upper Assam ;
- (ii) the need for coal as fuel in the making of cement in the Assam and Surma valleys ; and
- (iii) the "hidden" coalfield recently reported by the Geological Survey of India in the Garo Hills and adjacent areas of the Khasi Hills.

The occurrence of coal in Assam was first brought to public notice during the survey operations of over a century ago. Four chief areas were early recognised : (1) those of Upper Assam on the flanks of the Patkoi range ; (2) several small coalfields in the Khasi and Jaintia Hills of the so-called Shillong Plateau ; (3) the Karaihari coalfield at the western end of the Garo Hills ; and (4) coal, then still unlocated, in the Eastern Himalayas.

In the intervening years it has been found that crushed and dislocated seams of true Gondwana coals of the same geological age as those of Raniganj occur in the Aka and Daphla Hills of the Eastern Himalayas, but like the similar coals of the Darjeeling Himalaya and Bhutan, they are not attractive for commercial exploitation. The Karaihari coalfield in the Garo Hills has been found to contain thin impure seams of shale-like coal which can never repay exploration, except for local use as fuel for brick burning.

Surveys during the past fifty years have, however, proved the existence of good coal in the heart of the Garo Hills in the Upper Simsang Valley, and also south of the Tura Range, but these areas are still somewhat inaccessible and are difficult to work. In the Khasi and Jaintia Hills, in addition to the small coalfields of Satanga, Lakadong, Mawbelarkhar, Laitryngew, Cherrapunji and Mawlong others have been located west of the Jadukata river in Langrin and Nongstoin.

A small field with poor coal was also found north of Shillong, west of the motor road to Gauhati and named the Um Rileng coalfield. In Upper Assam collieries have been at work for sometime south of Nazira at Borjan in the Naga Hills and also in the now well known Makum coalfield, in the loop of the Tirap river, at Namdang, Tikak, Ledo and recently at Likhapani and Tipong. The coal occurrences further to the north-east in the Namchik, Namphuk and on the northern flanks of the Maiobum range, south of the Nao Dihing, remain untouched in a somewhat isolated region.

The reports on the coalfields of Namchik and Namphuk suggest attractive reserves of about 600,000,000 tons in each area, and require further consideration before serious work could be undertaken for their development. These fields will probably furnish coal to northern Burma when railway communication is established through the Hukang Valley between Assam and Burma, and until this means of transport is established this area of coal-bearing Lower Tertiary strata can hardly repay development.

Upper Assam Prospects

The coal extracted with a great deal of courage and skill from the complicated geological structures from near Makum into the Naga Hills, and from the lower tertiary rocks of Upper Assam is of excellent quality, and but for a relatively high percentage of sulphur in some places, would furnish coke of metallurgical quality for iron-smelting, although the coke now made could be readily utilized for reducing sulphide ores of copper, lead and zinc such as occur in Burma.

In the isolated coalfields in the Khasi, Jaintia, and Mikir Hills, experience has shown the reserves in each occurrence to be small, rarely exceeding 1,000,000 tons and usually only a fraction of this amount.

The areas of these coal occurrences are also somewhat isolated, so that development has depended on strictly local requirements, and thus Laitryngew and Cherrapunji are alone worked for coal at present.

Although coal seams appear to be continuously present in the strata in the coal bearing areas of Langrin and Nongstoin in the south western part of the Khasi hills, and in the still larger areas of similar rocks in the south-eastern area of the Garo Hills, a great deal of exploratory boring will have to be done to prove that the coal is of workable thickness and of good quality.

In almost every place where the coal seams actually show at the surface, as near Borsora (Barsaura) in Langrin or Soling in Nongstoin, or along the southern base of the Tura Range, they are steeply inclined or even dislocated and extraction would be costly and dangerous.

Investigations by the Geological Survey of India have been mostly concerned with the unravelling of the structure of the rocks and incidentally with the continuity of the coal seams, and it is on the basis of the geological structure, together with the fact that coal seams do out-crop where their horizon is exposed, that the existence of

workable coal in the south-eastern part of the Garg Hills and south-western area of the Khasi Hills has been surmised.

There appear to be two main seams of coal—an upper varying from 18 inches to 4 feet, and a lower varying from 3 feet to over 6 feet. The upper is relatively inferior while the lower seam is of good quality coal.

Presuming the coal seams to be continuously present under the areas indicated, it is computed that the reserves of coal, in the lower seam only, average about 75,000,000 tons each in the Langrin and Nongstoin areas within a depth of 500 feet of the surface, and probably over 500,000,000 tons in the area south of the Tura range west of Chut-mang mountain, at depths from 200 to 1,000 feet.

The Daranggiri coalfield reserves are estimated at 75,000,000 tons with coal lying at a depth of 300 to 400 feet. In all these cases expensive boring must be carried out to prove the Lower seam, and coal will ultimately have to be worked from shafts varying from 200 to perhaps 800 feet deep, and in most cases a railway or ropeway communication should constitute an important consideration.

MINING EDUCATION IN INDIA

PROGRESS DURING 1937

Increased interest in mining in India is revealed by a larger enrolment at the various mining institutes during 1937.

At the Indian School of Mines, the number of students on the roll at the beginning of the session was 68, as compared with 59 at the beginning of the previous session. The mine surveying camp was pitched at Bhulandararee colliery in November and 48 students were in attendance. Visits and tours of inspection were made to the mica mines of Kodarma, the copper and iron mines of Singhbhum and to many local collieries and places of geological interest.

In the Department of Mining and Metallurgy at the Benares Hindu University there were 95 students at the beginning of the session compared with 80 at the previous session. Immediately after qualifying practically all the graduates found suitable employment.

A mine surveying camp was arranged at Barakar in December and an underground survey conducted at Begunia colliery in the Raniganj coalfield. Tours of inspection were made to mica mines at Kodarma, the copper mines at Mosaboni and to a number of important collieries in the Raniganj and Jharia coalfields.

No advanced classes were held in the Raniganj coalfield during the year. Such classes, however, continued to be held under the auspices of the Government of Bihar at Jharia and Sijua in the Jharia coalfield. The total number of students attending the classes at these two centres was 79 as against 56 during the previous year.

In both the coalfields courses of lectures were delivered in the vernacular to overmen and sirdars. There were eight centres in the Raniganj coalfield in Bengal and 147 enrolled for this course. In the Jharia coalfield there were six centres with an enrolment of 285.

Classes in gas-testing were also held at Sitarampur and Jamuria in the Raniganj coalfield and at

Jharia in the Jharia coalfield for the training of colliery sirdars and shot-firers in gas-testing. The number of candidates enrolled for these classes in the Raniganj coalfield was 55 and in the Jharia coalfield 48.

Special classes in mine surveying preparatory to the examination for mine surveyors' certificates of competency were held at Sijua from August to November.

CHRISTMAS AND NEW YEAR GREETINGS

From December 14, 1938, to January 6, 1939, Christmas and New Year Greetings telegrams will be accepted at reduced rates with a minimum charge of ten words per telegram. In such telegrams the indication XLT should be inserted before the address, which will be charged for.

For Christmas and New Year Greetings telegrams addressed to Great Britain and Northern Ireland, *via* IRC and to all other countries in the British Empire the charge will be Rs. 2-3-0 for ten words or less and 3½ annas for each additional word.

In the case of Christmas and New Year Greetings telegrams addressed to other countries with which the Daily Letter Telegram service is in force (except Russia for which XLT service will not be accepted), the rate per word will be the same as for Daily Letter Telegrams, subject to a minimum charge for ten words per telegram.

In India such Greetings telegrams will be sent out for delivery in pictorial forms and envelopes.

MONEY ORDER SERVICE WITH AUSTRIA

In consequence of the amalgamation of Austria with Germany, money orders for and from Austria which, on account of their transmission through the British Post Office, were subject to a deduction by that office from the amount payable to the payee, are now exchanged direct between the Postal Administrations of India and Germany under the rules and conditions applicable to money orders exchanged between India and Germany and are not subject to any deduction.

INDIA AND WORLD TRADE

(Continued From Page 235.)

recovery, rising by Rs. 32,00,00,000 as compared with the preceding year and Rs. 24,00,00,000 as compared with 1935-36.

India's internal trade has been increasing in volume and continued unchecked during the whole of 1937-38.

Dealing with the last period of the year, the Review finds that a change, due to revival in Wall Street and American commodity markets brought the index of variable yield securities to the first small rise since 1937. Commodity and share markets have shown some revival from the middle of June, but it is too early to see whether this is the real beginning of a real business recovery.

JUTE HELPS IN U. S. A. FLOOD FIGHT

Yarn Used For Submarine Cable

ATTEMPTS TO FIND JUTE SUBSTITUTES

Central Jute Committee's Bulletin

In America thousands of jute sand bags were used to strengthen river dams and embankments during the floods which recently took place in New England.

At Lake Snipsic, near Rockville, more than 10,000 sand bags were piled against the dam. Rowboat crews hauled the sand bags into the lake and dropped them at strategic points to relieve the pressure on the dam. Similar precautions were taken at numerous other places throughout the section.

So says the Indian Central Jute Committee's Bulletin No. 8 for November, 1938, just published. The Bulletin contains a mine of information collected by its correspondents from Argentina, United States, United Kingdom, Italy, Germany, Turkey, Manchukuo and Australia. The Bulletin contains a monthly report of the progress of the Indian Central Jute Committee's work up to October 31, 1938. It gives figures of production and consumption of jute and the manufacture of jute goods as well as its stock. Dealing with Argentina, the Bulletin says that the maize exports were the heaviest for many months, and although grain crops were only just entering upon what is usually regarded the most critical period of their growth, they are in such a good shape that an optimistic view of their ultimate volume is generally held and a good demand for jute bags is anticipated.

The leading supplier of jute piecegoods was, as usual, India to the extent of about 85 per cent. of the imports. The balance of 10,000 bales was divided between the United Kingdom and the continental countries. The Bulletin observes that the high proportion of Argentine wheat which still is transported to Brazil in bags instead of in bulk is due to the fact that the bags in which the wheat is contained obtain free entry and find a ready market in Brazil, whereas new bags are subject to an import tax.

There is thus the peculiar situation that wheat is shipped in bags from a port elevator equipped for bulk loading to another port equipped for unloading bulk again.

The various industries which affect the sale or export of jute bags are dealt with separately in the Bulletin.

Fine and clean jute yarn of uniform size and quality is used in the cable industry. The yarn serves as a protective layer between the gutta percha insulated wire conductor, or core, of the cable and the iron or steel armour wires which are spirally wound round the outside of the cable. The jute serves as a bed for the armour wires preventing injury by them to the gutta percha.

The average amount of jute yarn used in the manufacture of submarine telegraph cable is approximately 800 pounds per nautical mile. A total of 13,000 tons of jute yarn is used in the

32,000 mile submarine cable system of the Western Union Telegraph Company.

Austrian Jutex

Jutex is the name given to a new material that has been made of jute and artificial resin by an Austrian firm. Jutex is first saturated with artificial resin and finally pressed hydraulically. Containers for the manufacture of steam engines, motors and motor car accessories and products for industrial purposes are made out of jutex. It is said to be a perfect substitute for metal and in some cases even better. The possibilities of using this new material are great. It is lighter than aluminium, with a specific gravity of only 1.4. The lightness, durability and firmness of jutex has led to the manufacture of cog wheels and machine accessories of this material by Austrian factories.

That the Indian Central Jute Committee has to aim at a high efficiency for the growth and manufacture of jute, since cheapness is its great asset, is emphasised by the attempts made to find a substitute for jute in various countries.

Probably the most important of all substitutes is the rosella Hemp fibre from Java which is becoming increasingly popular, and the mill manufacturing bags with this fibre is at present worked at full pressure. The rosella bags are said to be better and locally cheaper than jute bags and are in good demand. The output is estimated at two to three million bags and there is every likelihood of the capacity of the existing mill being increased. It is expected that within three or four years the Javanese mills will be able to supply all the bags used in the sugar stores in that country.

Amongst the activities of the Indian Central Jute Committee are a marketing survey, mainly by launch in the Pabna district, and a survey of the Jamalpur and Tangial sub-divisions of Mymensing district, marketing enquiries in Sylhet, Assam, contracts for the supply of seed of the improved strain of high land, or *olilovius*, jute known as Chinsura Green, investigation of the possibility of expansion of the supply of jute seeds, inspection of the seed multiplication arrangements, and technological research.

BIG FIVE YEAR TELEPHONE PLAN

RAPID PACE OF DEVELOPMENT

Out of the Rs. 2,50,00,000 Fund created last April for the development of telephone services, Rs. 40,00,000 are to be spent by the Indian Posts and Telegraphs Department during 1938-39.

The programme comprises the building of telephone exchanges at Arafwala, Barsi, Burewala, Pasrur and Raniganj; the installation of a three-channel carrier system between Bombay-Ahmedabad, Bombay-Karachi, and Calcutta-Delhi and a single channel system between Madras-Jalarpet, and Madras-Trichinopoly; the erection of copper wire between Montgomery-Barewala, Sialkot-Pasrur and Aligarh-Chandausi; and a second trunk wire between Coimbatore and Shoranur.

Six hundred switches will be set up in Connaught Place, New Delhi and additional switches in New Delhi and Lothian Road exchanges. Additional cables are to be laid for the expansion of the Delhi exchange and equipment at Lahore and Quetta will be increased. A new automatic exchange of 500/1,000 lines will also be installed at Nagpur. Trunk circuits are to be erected between Gauhati, Manipur Road and Mariani. A repeater will be installed at Mariani.

Before the creation of the telephone development fund, major telephone works for new exchanges and trunk lines and equipment were held up owing to lack of provision in the budget estimates. Thus, any schemes, however remunerative, which did not mature in good time for inclusion in the programme of capital works of a year and therefore in the budget estimates, had ordinarily to wait till the next year; this not only caused inconvenience to the public but also affected the development of the telephone system adversely.

Some Facts

The telephone system in India has been progressing at a rapid pace since 1925. Up to the end of 1924-25, there were only 14,800 telephones connected to Government-owned exchanges in India. Since then they have gradually gone up by leaps of 2,000 and 3,000 every year till they reached the figure of 29,000 in 1936-37, nearly double that of 1924-25.

The mileage of local telephone wire has also shown a similar expansion. From 1,02,100 miles in 1925-26, it went up to 1,28,100 miles in 1935-36. It is in trunk wire mileage that the expansion is most noticeable. It was only 12,618 miles up to the end of 1924-25, but in 1932-33 it went up to 32,100 miles and more than quadrupled itself in 1935-36, reaching 56,100 miles.

Revenue from trunk call fees, which was a meagre sum of Rs. 5,72,000 in 1925-26, became Rs. 30,76,000 in 1936-37. Telephone rents brought in only Rs. 26,61,000 in 1925-26, but rose to Rs. 46,55,000 in 1936-37.

Capital expenditure also rose from Rs. 1,02,90,000 up to the end of 1924-25 to Rs. 2,72,40,000 by the end of 1937-38. The yearly capital investment came down to Rs. 7,51,000 in 1928-29 from Rs. 17,17,000 in 1925-26. With a slight variation, it maintained an average between Rs. 6,00,000 and Rs. 11,00,000 till 1933-34. Since then it has been rising again and in 1937-38 it was Rs. 22,11,000.

India to-day has 571 exchanges as compared with 313 in 1925-26.

This rapid development of the telephone service and its commercial importance together with the increasing demand, required a more elastic and convenient arrangement for expedition and for stimulating the development of this remunerative branch of the Department.

The Government of India decided to constitute from April 1, 1938, a Telephone Development Fund from which to finance telephone projects, including telegraph line works required primarily for telephone purposes. The control of the Legislative Assembly over the expenditure of the Department has however, been safeguarded.

Beginning from 1938-39, the total estimated cost of telephone works for five years has been put down at Rs. 2,50,00,000 and has been sanctioned by the Government and transferred to the Telephone Development Fund. Thus a more flexible machinery has been provided for financing remunerative works, and stimulating the growth of a necessary service.

INSURANCE FEE ON FOREIGN PARCELS

JEWELS, SECURITIES AND BULLION

Uninsured parcels from foreign countries containing coins, bullion, bank notes, currency notes, or any kind of securities payable to bearer, platinum, precious stones, jewellery or articles of gold or silver, will be insured for inland transit and then forwarded to their destination as insured parcels and delivered to the addressee, subject to the payment of an insurance fee at the rates laid down in clause 250 of the P. and T. Guide.

The rates charged will be on the declared value of the contents or on the value assessed by the Customs authorities, whichever is higher, provided that if the value of the contents exceeds the maximum limit for which inland parcels may be insured the parcel shall be insured only for the maximum.

If the parcel is refused by the addressee, it will be returned to the country of origin.

A closed registered letter containing coin, bank notes, currency notes or any kind of securities payable to bearer, platinum, gold or silver, manufactured or not, precious stones, jewels or other valuable articles, received from a foreign country, will be transmitted to the destination from the office of exchange for delivery to the addressee in the same form as it is received without being insured for its inland transit within the limits of British India.

This means that compulsory insurance in the case of foreign registered letters containing precious articles has been removed and such articles will not be insured for inland transit.

A NEW INDUSTRY FOR INDIA ?

WRAPPING PAPER FROM INDIAN MATERIALS

FOREST RESEARCH INSTITUTE'S EXPERIMENTS

The Indian paper industry may take on a new line if the wrapping paper, which has been manufactured at the Indian Forest Research Institute, Dehra Dun, and is now being further tested, justifies hopes of its commercial possibilities.

Experiments carried out at the Institute have shown that a good cheap wrapping paper can be manufactured by a mixture of indigenous mechanical wood pulp and chemical grass pulp, raw materials for both of which are abundantly available in India. Neither old newspapers nor waste pulp, now largely used in the manufacture of wrapping paper, will be required for this process.

It is not known whether in other countries wrapping paper has been made by this process, for the usual method of manufacture is to use mixtures of mechanical and chemical wood pulps. Probably, India is the first country to adopt this new process.

Wrapping paper is, no doubt, being made on a limited scale in certain Indian paper mills, but not by this process; the manufacture is confined chiefly to the requirements of the individual mills themselves for packing their own products.

The significance of the new process is that it is hoped to build up a new industry, based on the utilization of indigenous raw materials and thus to replace the large quantities of this class of paper at present imported. It will be difficult, no doubt, to replace the use of old newspapers because of their extreme cheapness, but it can at least be hoped to oust a good proportion of cheaper wrapping paper at present imported and, to a certain extent, such old newspapers as are used for the wrapping of sweetmeats, provisions, etc.

The possibilities of such a new industry may be judged from the fact that in 1937-38 alone the total imports of cheap wrapping and packing paper amounted to 11,468 tons. In addition, 48,800 tons of old newspapers used for wrapping, valued at about Rs. 47,50,000, were also imported.

Calculations show that to date the production in India of this kind of paper, principally for use of the mills themselves, has hardly exceeded a negligible 3,000 tons per annum. Moreover, it is made chiefly from tailings and waste pulp and old newspapers.

Now Going To Waste

One of the expensive items in the manufacture of paper is chemical pulp; and Ulla grass, of which there are extensive supplies hitherto unutilized, is one of the cheapest raw materials for this purpose. For the other ingredient, mechanical wood pulp, which is the cheapest form of pulp, use can be made of small sized material, much of which is at present unsaleable and goes to waste. Such material can easily be obtained in Chir which is

largely converted into sleepers, but the rejections and the lop and top of which are now left to waste.

The Institute is at present concentrating on two raw materials, Chir Pine and Ulla grass. Pulp from Ulla is prepared by two chemical processes, which are in essence the same, but which vary in details of procedure. A study is being made of the relative economies of the two processes. For the cheaper papers, use is being made of the mechanical pulp from Chir, and the question of the proportions to be mixed with each of the two kinds of chemical pulp is under investigation.

Home-made Kraft

For the production of *Kraft* papers, the raw materials being used are Chir and bamboos. Both the raw materials are to be prepared by chemical processes of digestion. Indications so far are that bamboo pulp has slightly higher strength than Chir pulp, and that therefore bamboo will be suitable for the best quality *Kraft*, and Chir for the cheaper quality. It may be possible to cheapen the cost of production by mixing with the chemical pulp of either of these raw materials small proportions of chemical pulp from grass. A study is accordingly being made of the different kinds of *Kraft*.

The investigations have not yet been completed and are being continued to evolve a new process of manufacture, which will at once be the best and the cheapest, the aim being to produce cheap wrapping papers on a commercial scale at a cost which will render them competitive with the imported papers of a similar class.

Simultaneously with these investigations, attention is also being paid at the Institute to the need for assisting paper making as a cottage industry, but the difficulty is that hand manufacture and cheapness in production are hardly compatible in an industry of this nature where cheapness is the essential factor. An arrangement has, however, been concluded between the Institute and the United Provinces' Industries Department under which the Institute will undertake research into methods by which the present hand-made paper industry can be developed and existing methods of hand manufacture improved.

INSECT THREAT TO FORESTS

LABORATORY WAR OF EXTERMINATION

A war of extermination against various insects which cause enormous damage to Indian forests every year, is being fought in the laboratory at the Forest Research Institute, Dehra Dun, and in the plantations.

The Shisham plantations at Changamanga, Chichawatni, Daphar, Khanewal, Miranpur and Shahdara have been visited by a Forest Research Institute expert to study the extent of parasitism of the defoliators concerned and to obtain material for breeding in the Dehra Dun insectory. Several hundred thousand caterpillars were despatched from all localities by the Forest Entomologist and by the divisional staff.

A project to distribute and colonise the parasites of Shisham defoliators in the plantations will be undertaken next year.

It has been estimated that over 400 species of Indian insects visit lantana weed. To control lantana by means of its insect pests, the fauna of this weed has been studied at Dehra Dun. Over 50 species have been investigated of which 36 species attack the leaves, 10 the soft shoots, 7 the flower buds, 32 the flowers, 13 the young fruits, 10 the mature fruits and 1 species bores the woody stem.

Most of the species occur only in small numbers of individuals but several species of defoliators and flower or fruit caters breed continuously on lantana. The regular breeders are prevented from increasing abundantly by wilt disease and parasites; they are also difficult to rear in an insectory on account of disease, and do not offer much scope for artificial multiplication.

The lantana seedfly was introduced to Bangalore in 1921 and has since spread over the whole country. Fruits attacked by the fly definitely germinate and the germination percentage is of about the same order as in unattached fruits which is low. The fly cannot be regarded as important in preventing the germination of fallen lantana berries.

Insects In Cold Storage

An insectory was maintained at Nilambur last year to study the defoliation of teak and the parasites of defoliatory. Through the courtesy of the Forest Department, Burma, their Forest Entomologist maintained an insectory at Insein for the collection and despatch of teak defoliator parasites to Madras. An interesting feature of the work has been the successful transference of parasites from Burma to the teak plantations at Nilambur, the parasites being shipped in cold storage to Madras and thence by parcel rail to Nilambur.

About 1,000 individuals of *Cedria paradoxa* were transported from Dehra Dun to Nilambur in March, 1937, and over 5,000 cocoon-colonies representing 50,000 parasites were produced in the insectory. As hosts for this breeding-work, 11,800 caterpillars were used. About 40,000 parasites were released in 11 localities in the Nilambur teak plantations and a colony of 500 was successfully shipped to Burma.

Colonies of parasites reared at Dehra Dun on the mulberry defoliator were transported to Changamanga plantations, about 36,000 being released in one year.

A project to distribute and colonise the parasites of sissoo defoliators in the Punjab sissoo plantations will be undertaken in the current year.

Lists of desirable and undesirable plants as factors in the control of the two most important teak defoliators have been compiled and will shortly be published as the result of ecological surveys carried out in teak plantations.

The staff of the Systematic Section of the Forest Research Institute is engaged in the arranging, indentifying and summarising data on large numbers of insects, collected in tour, sent in by forest officers and reared in the insectory. Specialists in other countries continue to give their assistance, and 351 Indian species have been added to the reference collection.

STRANGE PROBLEMS FOR FORESTERS

MANUFACTURE OF FUSE POWDERS

Even such an organisation as the Forest Research Institute may be called upon to expose fraud and to act as a Sherlock Holmes.

For example, the North Western Railway received a supply of bottom boards from a firm, quite a number of which were suspected as being of some timber other than gurjun, the timber specified in the contract. Out of 781 boards, the railway accepted 99 as gurjun, and from the remaining 682, groups of similar looking woods were made, and 76 specimens were sent to Dehra Dun for checking. The investigations showed that out of these 76 specimens only five were gurjun. The remainder included no less than 21 different species.

In another case the same railway purchased from another firm some eng bottom boards, and as a large number of them appeared doubtful, they sent four specimens, representing different groups to Dehra Dun. Not one of them was found to be genuine.

An Executive Engineer in Bihar received a supply of sal and teak under a contract, but before finally accepting the timber as such, he sent specimens to Dehra Dun. They were found to be neither sal nor teak.

A Controller of Stores sent four samples of timber cut from a supply of bottom boards and asked for the Institute's opinion as to whether or not they were representative of the Burma gurjun known as kanyin. Only two were correct according to specifications.

Sometimes the enquiries are of a different nature. The Factory Rationalisation Committee, Army Headquarters, sent specimens of dogwood (obtained from the War Office in England) for examination, and wanted to know whether a similar wood grew in India, so that the Committee might be helped in "investigating the possibility of manufacturing in India certain fuse powders requiring the use of dogwood as a raw material for making charcoal".

The samples of dogwood were identified as *Rhamnus*. From an anatomical point of view it

(Please Turn To Page 243.)

INDIA'S MOST UP-TO-DATE AIRPORT

Sind Governor Opens New Buildings At Karachi

INDIAN FLYING CLUBS' CENTRAL RALLY

Karachi, the converging point of five air lines and one of the world's air traffic centres, was the rallying point for all the flying clubs of India, and for most of the civil aircraft in India, on December 5 and 6, 1938, when the airport's new buildings were opened by His Excellency the Governor of Sind.

The airways radiating from Karachi Airport directly serve 20 countries in three continents and it is the junction through which passes all air traffic between the eastern and western hemispheres.

This administration building is the first of its kind in India to be designed to meet all the requirements of a terminal airport on a comprehensive scale. The architect is Mr. R. T. Russell, C.I.E., D.S.O., F.R.I.B.A., Consulting Architect to the Government of India, who has followed the general principles first embodied in his design for the Willingdon Air Station at New Delhi, and now developed to full scale.

The form of plan selected for this building as well as for similar buildings at the larger Air Stations in India has been determined by the general principles of aerodrome layout and control adopted in this country. The administration building, hangars and other subsidiary buildings are for this reason grouped in one place, in an angle of the field wherever possible, with the former building projecting centrally at the apex of the building layout. This enables the Control Officer to have a clear view down the fronts of the receding buildings as well as of the field and thus see all movement operations.

The new building contains the aerodrome and route control, wireless station, meteorological observatory and forecast station, signal station, rooms for the customs examination of passengers and freight, postal sorting, passport and health examination and the technical examination of pilots and engineers. Accommodation was urgently necessary for these purposes and to serve the needs of passenger, mail and freight traffic.

For the convenience of passengers, a restaurant, bedrooms, waiting rooms, lavatories, post office, telegraph office, telephones and a bookstall are essential facilities now provided, while operating companies now have traffic offices, booking counters and a pilots' room.

The Focal Point

To ensure smooth co-ordination and unimpeded flow of traffic of all classes, all the accommodation has to be arranged suitably around a focal point.

This focal point is provided in the new building by the Central Booking and Waiting Hall which runs up through two floors with a gallery at the first floor level. Various company booking offices are grouped round this Central Hall. From it, three wings radiate—the main plan of the building being an inverted Y. The arm of the Y which projects into the aerodrome, accommodates the

Control and Chief Administrative Officers. Other office accommodation is provided in rooms linking the arms of the Y on the ground floor and also around the gallery on the first floor. The other two arms of the Y contain, respectively, on one side the restaurant with bedrooms over on the first floor, and on the other side Customs with Postal department above on the first floor.

From the Central Hall passengers for abroad and overseas depart by a corridor leading to "passport and medical inspection" and those arriving proceed through another "passport and medical inspection" and on through the Customs Hall. Passengers for local traffic take the opposite corridor.

Largest Hangar In India

With the opening of the administrative building, the large new hangar adjoining will also be placed in service. This hangar, the largest in India, comprises two bays each 190 feet in span and 100 feet in depth, and will house the biggest air transport aeroplanes yet built or building. It provides in addition some 15,000 square feet of floor space for workshops, stores and offices. Other works at Karachi which are now being brought into use comprise an extensive range of residential buildings for staff. An isolation hospital has also been built and taken into service in connection with the measures for preventing the spread of infectious diseases, particularly yellow fever.

Modern Ground Organization

The new buildings have been constructed by the Central Public Works Department of the Government of India, working under the general direction of the Civil Aviation Directorate, as a part of the Capital Works Programme for Civil Aviation drawn up in 1934. The opening of the new buildings marks the virtual completion of this programme, which for an expenditure of approximately 81 lakhs is providing India with an up-to-date, though still incomplete, ground organization for aviation on the Trans-India route and on the principal feeder routes.

The Aero Club of India and Burma organised for the opening a central rally of the affiliated Indian Flying Clubs and helped the clubs with their expenses.

A large gathering of aircraft from all parts of India assembled; aircraft owners were invited from Burma, Ceylon and Malaya. The Indian Flying Clubs formed flights and made a landing in formation immediately after the new administrative Building was declared open.

Landing, Aerobatic, Instrument Flying and Bombing competitions took place on December 6,

OVERCROWDING IN MENTAL HOSPITALS

PUBLIC APPRECIATION OF A GROWING NEED

Overcrowding, with its implications of growing hardship to the patients and increasing difficulties for the institutions, is reported in India's mental hospitals. With increasing urbanisation and education there is a greater demand that these patients should be cared for and that institutional treatment for the indigent mental patients should be a charge on the State.

At present there are only seventeen mental hospitals in British India, three in Madras Presidency, five in Bombay Presidency, three in the United Provinces, two in Bihar and one each in the Punjab, Central Provinces, Assam and Sind. The province of Bengal has arrangements by which its mentally defective patients are admitted to the mental hospitals in Bihar. There are no such hospitals in Orissa or the North-West Frontier Province.

Among States, Mysore has a mental hospital at Bangalore with accommodation for 183 males and 67 females, and Hyderabad has a small lunatic asylum in the Central Jail. A scheme for the construction of an up-to-date mental hospital has been sanctioned and the constructed work is to be started shortly.

In the 17 hospitals in British India there is accommodation for 8,425 patients, but the number of patients actually confined in these institutions in 1936 was 11,792 of whom 8,930 were males and 2,862 females. There was overcrowding in almost all the hospitals, but it was more acute in Madras, Bombay and the United Provinces. The demand for admission in some hospitals was so great that even criminal insanes had to be lodged in jails where there was no satisfactory arrangement for treatment.

A greater part of the accommodation in the existing mental hospitals is occupied by incurable patients, and the only important advance made in recent years has been the organisation of psychiatric clinics at medical teaching institutions in Bombay, Bengal and the United Provinces. No such clinics exist in the Punjab, Bihar, Central Provinces and Berar, Assam, North-West Frontier Province, Orissa, Baluchistan and Coorg. Funds are not available anywhere to provide adequate accommodation for mental patients, but whenever possible psychiatric clinics should be opened at the larger hospitals. Such clinics deal especially with the early curable cases and when combined with a Neurology clinic often produce the confidence which attracts patients.

Mentally Defective Children

Another pressing problem is the provision of separate institutions for the training of mentally defective children. In Madras a class of about 15 children, who were inmates of the Madras Mental Hospital, was formed in 1937 and instruction in sense training, simple story telling, picture drawing, etc., was given and facilities for excursions, outdoor games, amusements and certain simple cottage industries provided. In Bombay the training is given at the Byramjee Jeejeebhoy House for Children, Matunga, which is maintained by the Society for the Protection of Children in

Western India. The children are taught on Montessori lines and the training includes classes on sewing, embroidery, raffia work and bread work. Mentally defective children in Bengal are treated at two private institutions.

No facilities for the training of such children exist in the United Provinces, Punjab, Bihar, Central Provinces and Berar, Assam, Sind, N.-W. F. Province, Orissa, Baluchistan and Coorg.

Among the predisposing causes of insanity, judged from the conditions of admissions during 1936, were mental and moral stress, business and domestic worries, addiction to drugs and drinks, infections, previous attacks and hereditary predisposition. The largest number of cases were between the ages of 20 and 40. Out of a total of 11,798 cases of insanity in 1936, 839 were due to mental deficiency, 1,187 to maniacal depressive insanity, 1,949 to mania, 1,441 to melancholia and 2,195 to Schizophrenia including dementia praecox.

INDIAN TIMBERS' ELECTRICAL RESISTANCE

The variation of electrical resistance of wood with moisture content of some of the commercially important species of Indian woods is being studied at the Forest Research Institute, Dehra Dun.

The results so far obtained indicate that Indian woods can be divided into two groups, one having a relatively higher resistance than the other. The study is still in progress.

Another interesting investigation is that connected with battery separators. These are used in large numbers in India, and at present are practically all imported. The Institute is trying to find an Indian wood to take the place of the Port Orford cedar now used for this purpose.

MANUFACTURE OF FUSE POWDERS

(Continued From Page 241.)

was doubtful whether Indian *Rhamnus* species would serve the same purpose. So other possible Indian woods were suggested instead.

The Conservator of Forests, Bihar, sent sal poles to estimate the age by counting the rings, and incidentally also to ascertain, if possible, from the study of the wood structure, the effect of improved growth due to the trees being situated very near an irrigated area. The results obtained indicated that for some time to come, the possibility of finding out the age of sal trees by counting the growth rings will have to remain an open question. Further, the wood structure did not justify the conclusion that the wood produced from the irrigated areas was different from non-irrigated areas.

The Officer-in-Charge, Workshops, K. G. O. Bengal Sappers and Miners, Roorkee, sent a sample of wood from a folding boat for identification and to find out the cause of its failure. It was identified as *Aucoumea klaimiana* which is sold in Europe under the trade name of Gaboon mahogany. Microscopic examination showed that the timber was badly attacked by fungus.

DECISION ON WARDHA SCHEME

India's Educational Problems

CENTRAL ADVISORY BOARD'S MEETING

Broadcasting : Adult Education

The Wardha Education Scheme was the main subject of deliberation before the Central Advisory Board of Education in New Delhi on December 3, 1938.

In January, 1938, the Board appointed a Sub-Committee under the chairmanship of the Hon'ble Mr. B. G. Kher, Premier and Education Minister, Government of Bombay, to examine the scheme of educational reconstruction, incorporated in the Wardha Scheme, in the light of the Wood-Abbott Report on General and Vocational Education and other relevant documents. This Sub-Committee met in Simla in June last and submitted its report to the Board on December 3, 1938. The Board generally approved the recommendations.

The Sub-Committee first attempted to clear the misunderstandings and misconceptions which had gathered round the Wardha Scheme.

The Sub-Committee considered that these misunderstandings arose from either a misconception of the fundamental ideas on which the scheme rests or from the statements made by enthusiastic but misguided sympathisers or from some of the phraseology of the Zakir Husain Report itself, which is the authoritative Wardha Scheme of Education.

The Sub-Committee observed that the Wardha Scheme as presented in the Zakir Husain Report was one of education through activity and not of production as is generally believed, and that this scheme was in full agreement with the recommendations made in the Wood-Abbott Report so far as the principle of learning by doing was concerned.

The criticism of the scheme that it neglected religious education and was entirely secular in outlook was examined by the Sub-Committee who observed that the scheme did not imply any alteration in the present position by which any community at its own expense was permitted to give religious teaching in Government or Local Body schools to the pupils of that community. It was, however, emphasised by the Sub-Committee that the State should continue the present facilities for every community to give religious teaching when desired.

The Sub-Committee also discussed whether or not it was possible to teach through the basic craft all subjects to the standard anticipated. There was general agreement that in the lowest classes education could be satisfactorily carried out through activities, but certain elements of cultural subjects which could not be correlated with the basic craft must be taught independently.

Again, spinning and weaving should not be the only basic craft but any craft of equal or higher educative possibilities could be taught.

Stress was laid in the Sub-Committee's report on the training of teachers, the raising of their status, pay, etc. While generally approving these recommendations, the Board decided that copies of the Sub-Committee's report should be forwarded to provincial Governments for consideration.

Finance

The financing of the Wardha Scheme was outside the Sub-Committee's terms of reference, nor did it make recommendations as regards the co-ordination of this scheme with higher education. To examine these questions of finance and co-ordination and certain other matters arising out of the Wardha Scheme, the Board appointed another Sub-Committee consisting of the following members, with power to co-opt :—

The Hon'ble Mr. B. G. Kher, Premier and Education Minister, Government of Bombay, *Chairman*; The Hon'ble Qazi Ataullah Khan, Minister of Education, Government of the N. W. F. Province; Rajkumari Amrit Kaur; Mrs. Hansa Mehta, Parliamentary Secretary for Education to the Hon'ble the Prime Minister, Bombay; Dr. Zakir Husain, Principal, Jamia Millia Islamia, Delhi; Pandit Amaranatha Jha, Vice-Chancellor, Allahabad University; Dr. W. A. Jenkins, Director of Public Instruction, Bengal; Mr. W. H. F. Armstrong, Director of Public Instruction, Punjab; and Mr. John Sargent, who has been appointed to succeed Mr. J. E. Parkinson, C.I.E., as Educational Commissioner with the Government of India.

Adult Education

On the problem of adult education and illiteracy, it was explained that some provinces were now beginning to make serious attempts towards the removal of adult illiteracy. The Board felt that this was one of the most important problems to be examined on an all-India basis. It therefore appointed a Sub-Committee consisting of the following members, with power to co-opt, to examine this problem carefully :

The Hon'ble Dr. Syed Mahmud, Minister of Education, Government of Bihar, *Chairman*; The Hon'ble Mr. Sampurnanand, Minister of Education, Government of the United Provinces or Mr. R. S. Weir, Director of Public Instruction, United Provinces; Rajkumari Amrit Kaur; Mr. W. H. F. Armstrong, Director of Public Instruction, Punjab; and Mr. John Sargent who has been appointed to succeed Mr. Parkinson as Educational Commissioner with the Government of India.

After these two Sub-Committees have reported, the Board will consider what action should be taken.

Educational Broadcasting

Mr. A. S. Bokhari of the Broadcasting Department, present by invitation, explained the position of educational broadcasting. He stated that at present four All-India Radio stations, viz., Delhi,

Madras, Bombay and Calcutta, regularly broadcast educational programmes but that this was purely experimental. It was felt that there should be closer co-operation between the radio authorities and the educational authorities about these programmes. The Board suggested that a strong committee on which the educational authorities should be adequately represented should be appointed for the All-India Radio station, Delhi, which should be used as an experimental station for educational broadcasting to try various experiments which might be extended to other stations if successful.

A State scholarship varying in value from about £250 to £350 a year for study abroad is awarded every year by the Government of India in the Department of Education, Health and Lands to a student who is by birth or domicile a native of the territory under the administrative control of the Government of India or who, being the child or ward of a servant of the Government of India, has been educated in such territory.

The Board considered whether this scholarship should be confined to special work or be given for general education, and suggested that it should in future be awarded for special purposes, e.g., (i) training for particular posts such as those in special institutions like schools for defectives; (ii) preparation for some particular work, e.g., inspection of girls' schools, examination of educational systems or types of training, etc., and (iii) study in any branch of knowledge for which suitable facilities do not exist in India.

Primary Education

At its second annual meeting held in 1936 the Board referred the question of administration and control of primary education to its Vernacular Education Committee. This Sub-Committee reported that there was need of more efficient administration and control of primary education, and made several valuable recommendations with a view to achieving this object. The Board noted with satisfaction that several provinces had taken action on the lines suggested in the report of this Sub-Committee, whilst others had appointed committees of their own to report on these questions.

Amongst the members of the Board, the following were present at the meeting :—

The Hon'ble Kunwar Sir Jagdish Prasad, K.C.S.I., C.I.E., O.B.E., Member in charge of the Department of Education, Health and Lands, Government of India, *Chairman*; Sir Girja Shankar Bajpai, K.B.E., C.I.E., I.O.S., Secretary to the Government of India, Department of Education, Health and Lands; Mr. J. E. Parkinson, C.I.E., Educational Commissioner with the Government of India; The Right Reverend G. D. Barne, C.I.E., O.B.E., V.D., Bishop of Lahore; Lady Grigg; Rajkumari Amrit Kaur; The Hon'ble Mr. Justice M. R. Jayakar, Judge, Federal Court of India; Mr. P. F. S. Warren of Messrs. Jessop and Co., Calcutta; The Hon'ble Diwan Bahadur Sir K. Ramunni Menon; Dr. Sir Zia-ud-Din Ahmad, C.I.E., Ph.D., D.Sc., M.L.A.; Mr. Abdur Rasheed Chaudhury, M.L.A.; Pandit Amaranatha Jha, Vice-Chancellor, Allahabad University; Dr. R. C. Mazumdar, Ph. D., Vice-Chancellor, Dacca University; Mrs. Hansa Mehta, Parliamentary Secretary for Education to the Hon'ble Prime Minister, Government of Bombay; Dr. W. A. Jenkins, I.E.S., Director of Public Instruction, Bengal; Mr. R. S. Weir, I.E.S., Director of Public Instruction, United Provinces; Mr. W. H. F. Armstrong, I.E.S., Director of Public Instruction, Punjab; The Hon'ble Dr. Syed Mahmud, Minister of Education, Government of Bihar; The Hon'ble Mr. S. V. Gokhale, Minister of Education, Government of the Central Provinces; Mr. G. A. Small, I.E.S., Director of Public Instruction, Assam; The Hon'ble Qazi

Ataullah Khan, Minister of Education, Government of the N. W. F. Province; Khan Bahadur G. N. Kazi, Director of Public Instruction, Sind; and Mr. S. C. Tripathi, I.E.S., Director of Public Instruction, Orissa.

Mr. John Sargent, who has been appointed to succeed Mr. Parkinson as Educational Commissioner with the Government of India, took part in the discussions, rendering the Board material assistance. Unfortunately Dr. Zakir Husain, who was invited to help the Board in the discussion of the Report of its Sub-Committee on the Wardha Education Scheme, was unable to attend on account of illness.

KING EMPEROR'S ANTI-TUBERCULOSIS FUND

TWENTY-FOURTH SUBSCRIPTION LIST

GRAND TOTAL NOW RS. 66,81,832

The twenty-fourth list of subscriptions actually received up to November 30, 1938, in response to Her Excellency the Marchioness of Linlithgow's Appeal for the King Emperor's Anti-Tuberculosis Fund, amounts to Rs. 3,34,850-4-1 which brings the grand total of cash in hand to Rs. 66,81,832-2-2.

	Rs.	A.	P.
Total amount previously acknowledged	63,46,981	14	1
Assam.—Through Provincial Organisation	3,000	0	0
C. P. and Berar.—Through Provincial Organisation	17,500	0	0
Madras.—Through Provincial Organisation	12,500	0	0
Punjab.—Through Provincial Organisation	8,000	0	0
Sind.—Mr. M. L. Khanna, Sukkur	1	11	0
United Provinces.—Through Provincial Organization	19,210	0	0
Baluchistan.—K. E. Anti-Tuberculosis Fund, Quetta	11	0	0
Ajmer-Merwara.—K. E. Anti-Tuberculosis Fund, Ajmer	14,000	0	0
Centre.—Central Excises and Salt Department, Northern India, Delhi	3,471	13	6

STATES

Ajaigarh Durbar Rs. 2,000-0-0, Sarila Rs. 390-0-0, Hindol Rs. 151-0-0, Sant Rs. 1,123-4-0, Pudukkottai Rs. 12,813-1-7, Jind Rs. 5,766-8-0, Kapurthala Rs. 25-14-0, Tonk Rs. 297-14-6, Jodhpur Rs. 578-8-0, Jaisalmer Rs. 1,400-0-0, Bharatpur Rs. 1,091-8-6, Bikaner Rs. 2,25,018-3-0, Jhalawar Rs. 3,500-0-0, Western India States Agency Organisation Rs. 3,000-0-0. Total Rs. 2,57,155-11-7.

GRAND TOTAL RS. 66,81,832-2-2.

Bengal Leads

The progressive totals of the amounts credited to the Central account at New Delhi in respect of the various Provinces are published below :—

	Rs.	A.	P.
Assam	96,192	7	9
Bengal	5,10,716	10	7
Bihar	57,520	3	1
Bombay	4,92,985	8	6
C. P. and Berar	68,189	10	3
Delhi	90,976	1	0
Madras	4,47,829	2	0
N. W. F. Province	43,317	9	9
Orissa	46,454	9	6
Punjab	3,98,119	0	6
Sind	45,390	3	0
United Provinces	2,03,651	9	3

DAIRY HUSBANDRY DEVELOPMENT

Increasing Interest In The Industry

CREAMERY ENQUIRIES

Work Of The Imperial Dairy Expert

Over one hundred complete major schemes, with plans and estimates, for the establishment of dairy and cattle breeding farms and similar institutions to be run as commercial concerns, were supplied by the Imperial Dairy Expert, Bangalore, at the request of Provincial Governments, Indian States, City Municipal Corporations, private institutions and individuals interested in the industry, during the first year of the existence of his office. There were also numerous enquiries from the public and the trade.

One of the most encouraging features of the year has been the increased interest shown by Indian States in the development of dairy husbandry and more particularly in the improvement of the milch stock. This is of particular interest as most of the established Indian breeds of to-day have their origin in Indian State territories. Several requisitions were received from these States for help and advice in the starting of small dairy farms, foundation herds for breeding pedigree stock and even for the reorganisation of the department controlling such activities. This help was given either by correspondence or by personal visits by expert staff wherever possible.

Twenty Years' Progress

Two decades ago, the dairying industry in India was in a moribund condition. To-day there is greater interest and a great deal of work has been done from the agricultural and national points of view, since the inception of the post of the Imperial Dairy Expert in 1920.

That the trade has begun to realise that progress can be made only by large scale organised efforts, is revealed by the large number of inquiries pertaining to the creamery system of dairying that are being received. No less than 25 inquiries were received relating to the manufacture of products like casein, condensed milk, milk powder and ghee on a factory system.

Another encouraging sign of the trade being developed on more scientific lines was the demand from the butter manufacturers for special cultures for improving the quality of local butter, to enable it to compete with the butter which is being imported into India from foreign countries in increasingly large quantities. Unless the local butter industry receives proper technical guidance and help, this foreign competition threatens to seriously handicap its further development. Help in this direction was given so far as the resources of the department permitted.

Improving Milch Breeds

Another great stride in the development of the milch breeds of Indian cattle was the decision of the Standing Cattle Committee to establish 'Herd Books' for six of the most important breeds, including the Scindi and the Goi; the schedule of breed characteristics was done by the office of the Imperial Dairy Expert. Co-operation was also offered by this office in drawing up a similar schedule for the Tharparkar breed of Sind.

Progress was visible during the year in the development of dairying on co-operative lines. Two notable examples are the starting of the Madras Co-operative Milk Union and the Co-operative Milk Union of Lucknow. The former has in hand the establishment of a milk pasteurising station equipped with the most up-to-date plant for the collection of milk from the small producers and supplying the same after processing to the City of Madras; the latter, though a modest beginning, has the same aims.

Technical Help And Advice

Of the enquiries received and answered by the Imperial Dairy Expert during the year, 37 were from the various departments of the Central, Provincial and State Governments; 63 from private individuals and 39 from firms, associations, institutions and other organisations, making a total of 139.

Classified according to the places of origin, 21 enquiries were from Madras; 20 from Bombay; 17 from the Punjab; 13 from the Bengal; 12 from the United Provinces; 8 from the Central Provinces; 6 from Bihar; 4 each from Coorg and Delhi; 3 from Sind and 1 each from Assam and North West Frontier Province. In addition, there were 25 enquiries from the Indian States and one each from Burma, Ceylon and Italy.

Attempts were also made during the year to bring home to the people the lessons of research through cinema films, posters and lantern slides.

There was an increased demand for dairy training, especially for short period of advanced training. The total number of students who were trained at the Bangalore Dairy Institute during the year was 55. One of the principal difficulties in admitting more students was the limited hostel accommodation.

HIGH MILK YIELDING STRAINS AT IMPERIAL DAIRY INSTITUTE

The work of developing high milk yielding strains from the Scindi and the Gir breeds, by systemic selective breeding, is in progress at the Imperial Dairy Institute, Bangalore.

Both the herds continue to show considerable improvement in type, conformation and performance. One more herd, i.e., of the Murrah buffalo breed, has now been taken in hand for systemic improvement.

The Scindi herd is showing steady improvement as more and more farm bred animals are added to it. The Gir herd, however, has shown violent variations; this is because the foundation herd was established in 1933. The care, management and feeding which these purchased animals received at the farm considerably improved their performance in the subsequent lactation. Some more purchased animals were added in 1935-36 and this accounted for the sudden drop in the performance for that year. This was, however, followed by rise next year.

Systemic Selection

The improvement which can be achieved through systemic selective breeding of the purchased stock can be judged from a few figures.

The average milk yield of Scindi herd is 3,047 lbs. for farm bred animals, as against 2,746 lbs. for purchased animals. In the case of Gir herd, the farm bred gave an average milk yield of 2,653 lbs. as against 2,470 lbs. of the purchased animals. The buffalo herd yielded 4,663 lbs. for farm bred, as against 4,530 lbs. for purchased animals.

The Scindi herd which was started in 1933-34 now numbers 179. No more purchased animals are now added and the herd is being gradually increased by the addition of farm bred animals. Thirteen more first calvers have been added to the milch herd. Two of the best performances were; one (age 4 years 4 months) 4,052 lbs. for 359 days and the other (age 4 years 5 months) 3,927 lbs. for 263 days.

The improvement of this herd was started with three recorded bulls purchased from the Willingdon Cattle Farm, Karachi; so the progeny now being obtained is from recorded sires and dams in most cases. Some of the daughters of these bulls are coming into milk and the results are being watched with interest. Two farm bred bulls with recorded performance for three generations have been brought into service and it is expected that progress henceforward will be rapid.

This herd perhaps is the most highly recorded Scindi herd in the country today.

The Gir herd was established in 1933-34. The foundation herd was purchased from the open market and consisted of unrecorded animals; Its present strength is 47. Still in infancy, although records of performance up to 6,290 lbs. in a lactation of 342 days, have been observed of farm reared animals, the herd continues to be supplemented by animals purchased from the open market where the selection can only be made on outside conformation. Now that first calvers from recorded mothers have started coming in, it is hoped that the progress in the improvement will be more rapid. The best farm bred Gir heifer aged 2 years 10 months gave 3,033 lbs. of milk in 220 days. Improvement so far is carried out by bulls which are believed to have come from good mothers, but from this year a farm bred bull with recorded pedigree is being put at stud.

Breeding Policy

The present strength of the Murrah buffalo herd is 52. Although some animals have been in the farm for some time, systemic improvement could not be started till the year 1935-36, on account of their small number and various

other causes. The herd has been supplemented by a few buffaloes transferred from the farm at Karnal in 1935, and now consists mostly of farm bred animals. The best performance last year of a first calver aged 4 years 11 months was 5,238 lbs. in 349 days. The herd is now headed by a bull with a recorded pedigree, the highest yield in the dam's performance being 7,460 lbs. in a lactation of 460 days.

For all these herds, weaning at birth and hand rearing has all along been adopted. In hand-feeding the calves, the aim is to build up a sound commercial pedigree herd and not to produce freak animals. A definite breeding policy has been laid down, which helps to eliminate an unwanted animal at the earliest opportunity.

BANGALORE DAIRY EXPERIMENTS BRANDING CATTLE

Experiments of interest to dairy farmers are being conducted at the Imperial Dairy Institute, Bangalore.

What is the best way of cleaning milk bottles? Steam, a dilute solution of perchloron, catadyned water, have all been tried. Catadyn water has been found effective in destroying spore farmers. Steaming for five minutes is quite satisfactory and equally good is the use of perchloron solution in a dilution of 1 : 10,000 parts chlorine.

The size, shape and number of fat-globules of samples of milk from the principal breeds of cows and buffaloes in India have been studied to find out the difference in the milk of cows and buffaloes, milch breeds and draft breeds and to get a classification of milch breeds according to the suitability of their milk for marketing, butter and cheese-making.

To find out which method is more lasting, humane and easily visible, the branding of cattle by hot iron and by brand-em-al solution (caustic solution) has been under investigation. It has now been conclusively proved that the hot iron branding if done properly gives the best results. With the solution method the branding has to be done yearly, the burns take a much longer time to heal and the repeated numbering disfigures the animal.

Feeding Experiment

A study has also been made of the effects of vegetable oil feeding on the general condition of the animal, milk yield, milk-fat content, the quality of butter production and dry matter consumption. A supplement of groundnut and sesame oil to the ordinary dairy rations of cows has been found to show no effect on the percentage of fat in milk, although the butter shows marked difference in its chemical and physical properties.

At the request of the Imperial Council of Agricultural Research, experiments have been carried out to ascertain the suitability of Parga milk containers for use in the distribution of milk in India. The containers have been found to possess distinct advantages over the ordinary glass bottles in lightness, ease of handling and transport, economy of labour in collecting and washing, durability and proper sealing. The only serious drawback to their introduction in India, however, seems to be their initial cost.

LABOUR DISPUTES IN INDIA

Working Days Lost

THIRTYEIGHT LAKHS IN A QUARTER

Over 38,00,000 working days were lost in 94 labour disputes involving nearly 1,50,000 workers in the quarter ending 30th June, 1938.

Of the disputes, 8 were successful, 27 partially successful and 42 unsuccessful, while 17 were in progress on the date when the quarter ended.

Important strikes which occurred during the quarter were:—

	WORKERS INVOLVED	DAYS LOST		WORKERS INVOLVED	DAYS LOST
1. The Reliance Jute Mill, 24-Parganas (Bengal)	4,612	2,07,540	5. The Tinsplate Company, Golmuri, Jamshedpur (Bihar)	3,000	1,56,000
2. The Kulti Workshops of the Indian Iron and Steel Company, Burdwan (Bengal)	10,000	2,50,000	6. The Papanasam Mills, Tinnevely District (Madras)	6,300	1,26,000
3. The Hirapur Workshops of the Indian Iron and Steel Company, Burdwan (Bengal)	4,000	1,04,000	7. The Madura Mills, Madura (Madras)	11,500	2,30,000
4. The Musabani Copper Mines, Singhbhum (Bihar)	3,400	1,85,980	8. The Chittivalsa Jute Mills, Chittivalsa, Vizagapatam District (Madras)	3,200	1,79,200
			9. The General Strike in the Cawnpore Mills, Cawnpore (United Provinces)	48,381	18,67,118

CLASSIFICATION BY PROVINCES

PROVINCES	Dis-putes	Workers Involved	Days Lost	DEMANDS					RESULTS			
				Wages	Bonus	Personnel	Leave And Hours	Others	Successful	Partially Successful	Unsuccessful	In Progress
Assam	1	742	1,484	..	..	..	..	1	..	..	1	..
Bengal	31	29,413	7,50,614	12	..	11	2	6	3	5	19	4
Bihar	7	10,680	4,39,680	2	..	3	..	2	..	4	..	3
Bombay	24	16,871	52,687	15	..	3	1	5	..	6	18	..
Central Provinces	4	3,254	3,284	3	..	..	..	1	..	..	1	3
Delhi	..	..	..	..	..	..	..	..	..	..	..	..
Madras	16	29,044	6,90,713	6	1	5	2	2	2	7	2	5
Orissa	..	..	..	..	..	..	..	..	..	..	..	..
Punjab	7	3,021	36,681	4	..	2	..	1	1	4	1	1
Sind	3	657	2,045	2	..	1	..	..	2	1	..	..
United Provinces	1	48,381	18,67,118	..	..	..	..	1	..	..	..	1
	94	1,42,063	38,44,306	44	1	25	5	19	8	27	42	17

CLASSIFICATION BY INDUSTRIES

INDUSTRIES	Dis- putes	Workers Involved	Days Lost	DEMANDS					RESULTS			
				Wages	Bonus	Personnel	Leave And Hours	Others	Successful	Partially Suc- cessful	Unsuccessful	In Progress
Cotton And Wollen Mills	39*	85,387	21,16,144	22	1	8	..	8*	1	15	17	6*
Jute Mills	6*	18,562	6,78,040	1	..	1	2	2*	..	..	4	2*
Engineering Work-shops	13*	17,359	3,88,262	4	..	6	..	3*	..	4	6	3*
Railways Including Railway Work-shops	1	440	660	..	..	..	1	..	..	..	1	..
Mines	2	3,812	1,88,040	..	..	..	..	2	..	..	1	1
Others-Miscellaneous	36*	16,503	4,73,160	17	..	10	2	7*	7	8	13	8*
Totals	97*	1,42,063	38,44,306	44	1	25	5	22*	8	27	42	20*
	less 3							less 3				less 3
	94							19				17

* One strike affected 4 industries.

CLASSIFICATION BY MONTHS

PARTICULARS	April, 1938	May, 1938	June, 1938	For The Quarter Ending June 30, 1938
Disputes In Progress At The Beginning	7	18	13	7
Fresh Disputes Begun	39	29	19	87
Disputes Ended	28	34	15	77
Disputes In Progress At The End	18	13	17	17
Numbers Affected	54,464	94,694	90,064	1,42,063
Days Lost	7,05,694	11,62,434	19,76,178	38,44,306
RESULTS				
Successful	1	6	1	8
Partially Successful	11	10	6	27
Unsuccessful	16	18	8	42
In Progress	18	13	17	17

WORLD TRIBUTE TO INDIAN SCIENTISTS

Vital Problems Of India's Health

CHOLERA : MALARIA : YELLOW FEVER : LEPROSY : NUTRITION

Medical Research Workers Confer

Vital problems affecting India's health were reviewed at the Sixteenth Annual Medical Research Workers' Conference which was opened by the Hon'ble Sir Jagdish Prasad, Member for Education, Health and Lands in the Conference Hall of the Imperial Secretariat, New Delhi, on December 12.

An unusually large number of medical and health interests were represented, including administrative heads of Medical and Public Health Departments, distinguished members of the women's medical profession, Indian States' representatives, military health services, railway medical organisations, the Rockefeller Foundation, the Indian Council of Agricultural Research, and others.

Sir Jagdish Prasad's Address

In opening the Conference Sir Jagdish Prasad said :—

"You have come here from various parts of India, some of you from the remote South, in order to apply yourselves to an extensive and formidable technical agenda.

"Till last year this Conference was held in Calcutta and to some extent, therefore, functioned in a restricted orbit. I hasten to say, in deference to the feelings of any Calcutta persons present, that I do not consider that great city a restricted spot in itself; what was in my mind is that the continued association of your Conference with a single city in India had prevented the people of Northern India, for example, from having the aims and scope of medical research work in India brought more closely home to them. I think it has been a great benefit to have had it brought to Delhi, and I would be glad in due course if it could go the rounds of the main centres in India where those of your profession could conveniently gather and where they would find an appreciative local audience and co-operation. For the present, however, you are in Delhi and we are glad to have you here.

"I understand that it is no mere coincidence that during this week another conference is being held in Delhi, namely, that of the Association of Medical Women in India. A new and desirable innovation is that the delegates to the latter conference will be enabled to attend your morning sessions where they will have the benefit of listening to and taking part in your discussions.

"As you are probably aware, the Research Fund Association was founded in 1911 through the foresight of the late Sir Harcourt Butler, the first Education Member of the Government of India and one of the greatest Governors under whom it has been my good fortune to serve. He did many big things in a big way, and not the least of them was the foundation of this Association. Let us cherish his memory in grateful remembrance.

"The Association has produced one remarkable result during the comparatively short period of its existence, namely, the training of a large number of Indian research workers of proved competence. Out of one hundred and six research workers paid by the Association no less than one hundred and three are Indians.

"In the Medical Research Department of the Government of India sixteen officers out of twenty-five are Indians.

"Research, therefore, is now predominantly in the hands of Indians, and they are the inheritors of a great tradition.

"Medical research in India has many achievements to its credit, especially the notable contributions it has made to our knowledge of kala-azar, malaria, plague and cholera. Prolonged research discovered the probable carrier agent of kala-azar and produced a method of mass treatment which practically stamped out the disease in its chief home, Assam. The efficacy of our prophylactic anti-cholera and anti-plague vaccines is now generally recognised. Though much work of world wide recognition has been done in regard to malaria, it is still one of our most formidable enemies and continues to take a heavy toll of life, to sap the energy of a vast number of our people. While we are proud of our achievements we cannot yet say, as for instance it can be said of England, that cholera, typhus, typhoid, plague, small-pox and malaria have been stamped out.

"A Wide Gap"

"There is still a wide gap in this country between the results of research and their successful practical application. Poverty, ignorance and prejudice among the masses, a certain scepticism as to the results of medical research among the educated classes, with a consequent absence of continuing pressure of public opinion on Governments for effective measures against disease, are some of the many causes which seem to make India the prosperous home of so many human scourges.

"In no country, except perhaps China, is the need for continued research and its practical application so insistent as in this country where life is often an uninterrupted gamble in disease.

"The prevalence of such a distressing variety of deadly human ailments probably accounts for some of the deep pessimism and fatalism that pervades Indian thought. The sorrow and deep tragedy of life, rather than its joy and brightness, obsess the mind. Such an attitude numbs initiative and deadens the effort to make life worth living.

"In my view nothing is more likely to stimulate public opinion and to make it realise the extent to which organisation under scientific direction can be effective, than the eradication or control of

even a single disease in a specified area. If we can free even one infested town of, say, malaria, we will have made a great advance in the education of public opinion.

"From this point of view the intensive and hitherto successful campaign against malaria in Delhi is of more than local importance. It not only brings the results of research, as it were, from the laboratory to the market place, but what is more important, it produces a healthy change in the attitude of the people in regard to the effectiveness of modern public health methods.

"I am sure that if we could say with confidence that we had completely freed Delhi of malaria and had made Simla safe for those who are now drawn there more by the force of circumstances than by reason of its reputation for salubrity, we should have done much to bridge the gap between medical research and its successful application to the lives of the people. We should have taken a big step forward to convince doubting men and women that there could be no more suitable object of public benevolence than the endowment of medical research.

"Without the aid of public benefactions I fear that with our present financial resources, the provision for medical research must remain inadequate for many years to come. In comparison with Western countries our expenditure on research is meagre and there seems little prospect of improvement in this respect in the near future. At the same time I fully recognise that it would be short-sighted policy if violent budgetary oscillations were to result in throwing out of employment a number of workers engaged in important work and in the prime of their powers. Such a policy would indeed give a serious setback to research in India and will, I hope, never find favour.

"Within Our Means"

"I should like you to remember that in a poor country like India it is not enough to discover a remedy. If it is to be widely adopted it must be within the means of the Government and peoples to apply.

"To give an illustration, the efficacy of quinine in the treatment of malaria is recognised. We all know, however, that at present prices quinine can be used by only a small fraction of the population. Research must, therefore, continue into remedies both preventive and curative which may be within the financial resources of the country. In India the research worker cannot ignore the economic conditions of the people for whom his researches are primarily meant.

"It will be generally admitted that some of the fundamental causes that produce ill-health such as poverty, overcrowding, defective sanitation and water supply, evil social customs and ignorance of the laws of health, are outside the immediate field of your work. Your primary concern is, I take it, with the causation, prevention and cure, of human diseases. Your object is to save human life and to alleviate human suffering, in contrast to some researches in other realms of science where new discoveries seem to threaten the very existence of civilisation as we know it.

"I do earnestly pray that no diabolical ingenuity may ever pervert the discoveries of medical science to the destruction of mankind. It is my earnest hope that by your continued researches you may place at the disposal of the men and

women of this country and of their Governments powerful weapons with which to destroy the long and desolating supremacy of disease and preventible death in this country and to secure for the people of India the inestimable blessings of health and physical fitness."

General Bradfield's Address

General Bradfield said he joined with the Hon'ble Member for Education, Health and Lands in extending to them all a hearty welcome to Delhi. The holding of the Conference in Delhi last year had to some extent been an experiment, but the general satisfaction expressed by the delegates had encouraged the Scientific Advisory Board to suggest Delhi for a second time. By the end of the week, a decision would have to be made regarding arrangements for next year. They had anticipated the desire expressed by Sir Jagdish Prasad to see the Conference held in different large centres in India, for he understood that their fellow workers in Bombay and in Madras had already made certain suggestions in that respect. These would be considered before a final decision was reached.

Women Delegates

Looking through the list of delegates, the Director General said he had been struck by the wider number of medical and health interests represented as compared with earlier Conferences. It was a great pleasure to have again the assistance of distinguished members of the women's medical profession, and a welcome innovation would be the attendance at their morning sessions of delegates from the Annual Conference of the Women's Medical Association of India, which was also being held in Delhi during the week. He felt sure that they would find many of the discussions both interesting and profitable.

Indian States were represented by ten officers, of whom nine received a special training in nutrition survey work at the Coonoor Laboratories during the early months of the year. They were glad that these States recognised the importance of the Indian Research Fund Association and realised the benefits to be derived from making contact with its activities. He welcomed representatives of the Rockefeller Foundation whose presence indicated the continued interest which the Foundation took in the promotion of public health, and Mr. Knipe and Mr. Dyer, whose special knowledge of sanitary engineering in general and anti-malaria engineering in particular would undoubtedly be of great value to health administrators in this country. By their assistance in promoting measures for the improvement of the health of the rural population, the work of the Rockefeller Foundation had made a definite impression on the public health of India, which would prove of lasting value to progress in that field.

Military Health Services

The presence of representatives of the highly organised military health services reminded them that the health problems of the military and civil populations in India converged so closely in many places that only cooperative action could ensure success. The necessity for that cooperation was well recognised both by military and civil administrators, and its further development would be discussed at the forthcoming meeting of the Central Advisory Board of Health.

The Indian Council of Agricultural Research, whose nutritional and other activities in the fields of agriculture and animal husbandry were so closely allied to their own, were represented this year by Mr. Kerr whom they were glad to welcome.

The increased representation of the railway medical organisations on the occasion was gratifying to them all, and the Director General assured Dr. Cairns and his colleagues that they welcomed their participation in the discussions. The railway medical organisations in this country were large and important and, as in the case of the military authorities, their co-operation in the field of public health was of vital importance.

The railway authorities had further contributed towards making the Conference a success. General Bradfield referred to the generous action of the Railway Board in arranging that their delegates should be given the benefit of Christmas concession fares at a date considerably earlier than that on which these were ordinarily made available. This had enabled the presence of a number of research workers who might otherwise have found it impossible to attend.

Research And Finance

In discussing the affairs of the Indian Research Fund Association, its research activities during the present year and its plans for the coming year, General Bradfield felt it his duty to bring to their notice at once that, contrary to expectation, the financial position of the Association, which had been a cause of anxiety to both the Governing Body and the Scientific Advisory Board for some years, had not improved. Since 1932 the activities of the Association had been maintained at their present level only by drawing on capital funds, because the Government of India had been unable to give an annual grant larger than Rs. 1,50,000, compared with its previous grant of Rs. 7,50,000. It was hoped that this drain on the capital of the Association would be appreciably reduced during 1938-39 by the Government of India undertaking responsibility for the Public Health Section of the Malaria Institute of India. Unfortunately, this hope had not materialised and the Governing Body had been compelled to draw further on its capital to the extent of Rs. 4,50,000.

These facts were mentioned so that they would appreciate the necessity for close scrutiny of the proposals for next year's programme. After the unfavourable financial position revealed itself in April last, the Executive Committee of the Governing Body was compelled to consider whether some, if not all, of the newly sanctioned researches should not be cancelled. Any such step would have meant the postponement of important investigations, and would have resulted in disappointment to those workers who had convinced the Scientific Advisory Board of the merits of their particular proposals and who, in some cases, had already engaged their staff. The Executive Committee, therefore, came to the conclusion that whilst sanctioned researches should be allowed to continue, the officers in charge should be required to limit their expenditure to absolute essentials.

Provincial Responsibility

The number of enquiries being conducted this year was 63 compared with 53 in 1937-38 and with an average of 38 during the five preceding years. Applications had been received for the continuation of 56 enquiries and for the inauguration of 22 new enquiries, or 78 in all. It would be necessary to examine every proposal with the greatest care, but the Scientific Advisory Board and the Governing Body would, as usual, give full consideration to their discussions and to the recommendations made by the Conference.

The grants given during the present year numbered 42 to laboratory enquiries and 20 to field enquiries. Nineteen of the enquiries were in medical colleges or schools. He drew attention to a matter which was not as fully appreciated as it might be. Whilst the Indian Research Fund Association had always considered applications for grants from medical colleges, it should be remembered that modern practice assigned a definite responsibility for research—and more particularly for investigation into problems of local interest—to teaching institutions, which should be provided with the scientific equipment and staff to undertake them. As evidence of their active association and sympathy with the ideals of this Conference they appreciated the attendance of a number of representatives of medical colleges, many of them old friends. Their research activities called for their sympathy, but they should also look for encouragement from the governing authorities of their own colleges and seek financial support from their Provincial Governments.

Referring to the committee of six which the Governing Body had set up to enquire into the conduct of medical research under the Indian Research Fund Association, General Bradfield said that the sub-committee, after preparing a preliminary draft earlier in the year, had met last week to adopt the final form of its report to the Governing Body. All that it was possible for him to say at the moment was that the committee had taken a broad view of its terms of reference.

During the year six officers were recruited to the Medical Research Department, including one for special research in malaria. Four had already joined and the others were expected to do so shortly.

In a resolution passed at last year's Conference regarding the necessity for placing adequate and cheap treatment of malaria within the reach of the people, they noted that the Government had instituted an enquiry into the possibilities of extending the cultivation of cinchona in India. The report of the special officer appointed to conduct that enquiry was now in the hands of the Imperial Council of Agricultural Research. The completion of this enquiry was an important step towards ascertaining the possibility of making India self-supporting in the matter of its quinine requirements.

Cholera Danger

General Bradfield made special reference to the question of cholera. The great danger which this disease continued to present in India was illustrated last spring when, as a sequel to the large mela held in Hardwar, an epidemic broke out and spread over wide areas of the country. The administrative control of these outbreaks would be more

suitably discussed at the Central Advisory Board of Health meeting which was to be held early in January. At this Research Conference they were more concerned with the efforts being made to elucidate the causes of such regrettable outbreaks and they would be able to assess the results achieved by the enquiries which had been in progress during the last five years.

Owing to the uncertainty which existed in regard to the relationship between the *V. Cholerae* and other vibrios, and in regard to the serological differentiation of the different types, the International Office of Public Health in Paris had decided that special investigations on these questions were urgently necessary. As a result of earlier work it had been made evident that many points could only be cleared up by research carried out in endemic and epidemic cholera areas and India was asked to undertake this work. Owing to the nature of the problem the work in India had naturally fallen into two phases, one laboratory investigation and the other conducted in the field. The phase of laboratory investigation had involved the collection and detailed examination of some thousands of vibrio strains from cases of cholera, from carriers and from water. Their work had proved that vibrios of many different types were widely distributed in nature, but by the adoption of new serological methods, the true cholera vibrio could now be differentiated from other types, whose presence in water supplies and human carriers had in the past led to much confusion.

Field Investigations

With a new and reliable basis for the diagnosis of the cholera vibrio and with more accurate knowledge of the distribution of other types General Bradfield said they were now in a position to undertake on an effective basis the second phase of the enquiry, the field investigation of the factors concerned in the epidemiology of cholera and particularly those concerned with its persistence in certain endemic areas. The Cholera Advisory Committee, would, therefore, be asked to discuss a proposal to terminate the enquiries of an essentially laboratory nature and to concentrate on field work in endemic areas such as were to be found in Bengal and Madras.

The work so far done had been undoubtedly productive and its value had been warmly appreciated by the International Office of Public Health. The Cholera Commission of that body in its report of May 1938 recorded its acceptance of the findings made in India which had answered the questions put forward by them in May 1934. Throughout these investigations close association had been maintained with workers of the Medical Research Council in England and it was hoped shortly to present a full and co-ordinated account of this work.

Nutrition

General Bradfield said that a training course for health officers in public health nutrition work, including methods of carrying out diet surveys, was held at the Nutrition Research Laboratories, Coonoor, in February and March last. Fifteen officers attended, twelve being from Indian States and the remaining three from Delhi, Orissa and Sind respectively.

Satisfactory publicity had been given to recent work of practical value to India by the issue of a Health Bulletin entitled "The Nutrition Value of Indian Foods and the Planning of Satisfactory Diets". To increase the circulation of the important information contained in this Bulletin, the Government of India had agreed to issue it at the specially low price of two annas. Nearly 25,000 copies had been sold. An up-to-date and enlarged edition was in the press, and an important improvement, which made the bulletin of greater value to the layman, was the inclusion of Indian names for the different foods.

Last year the Nutrition Advisory Committee emphasised the finding that skimmed milk was of great value in improving the health and development of Indian children and recommended that milk powder containing not more than 4 per cent. of fat should be exempted from customs duty. This recommendation had been accepted by the Government of India, so that imports of skimmed milk from Great Britain were now free of all duty whilst the duty on that from other countries had been reduced to 10 per cent.

The important Conference of Far Eastern Countries on Rural Hygiene held in Java in 1937 recommended the establishment of a National Nutrition Committee in each country. The Government of India had accepted this recommendation and had decided that the Nutrition Advisory Committee of the Indian Research Fund Association should perform the functions of a National Nutrition Committee for India.

The value of the work done under the auspices of the Association in the matter of nutrition and the high esteem in which the Association's Nutritional Laboratories at Coonoor were held by Eastern countries, had been indicated by a request from the League of Nations Health Committee that the Coonoor Laboratories should assume the task of co-ordinating nutrition research in the East. This request would come before the Governing Body for consideration at its next meeting. In March last, the Governing Body had given sanction to the acceptance by the Director of Nutritional Research of membership of the League's Technical Commission on Nutrition. During his leave this summer, Dr. Aykroyd attended a meeting of this Commission.

Regarding the malaria organisation, disappointment was experienced when the Government found it impossible for financial reasons to take over the Public Health Section of the Institute, an important element of which was the Field Experimental Station at Karnal. In 1936 this Conference had recommended that the Experimental Station should be transferred from Karnal to Delhi at the earliest possible date. There were obviously desirable reasons for making such a move. In the first place, it brought this important field unit into closer contact with the general public and with irrigation and other engineers. Moreover, a valuable museum had been built up at Karnal, but its remoteness was a serious handicap to its usefulness. The Government of India had agreed this year to give Flagstaff House in Old Delhi to the Association to house the Field Experimental Unit; the transfer from Karnal to Delhi was now in progress. In addition, the annual malaria classes would

in future be held in Delhi where the anti-malarial schemes now more or less completed would constitute an excellent demonstration of the value of anti-malarial schemes based on sound knowledge.

Yellow Fever

Last year he had made a brief reference to the danger of the introduction of yellow fever into India owing to the rapid development of air transport. On two previous occasions at these Conferences, General Graham, the late Public Health Commissioner, made a statement on the position. An important part of their preventive organisation was the arrangement under which the Sanitary, Maritime and Quarantine Board of Egypt not only kept them informed of the movements of suspected passengers proceeding to India but also took steps to destroy mosquitoes which might be present in suspected aeroplanes coming to this country. Colonel Russell had visited Egypt last spring and would give them a description of the present epidemiological features of this disease and the preventive measures now taken in this country against possible introduction of infection.

After his visit to Egypt, Colonel Russell had also discussed the subject with representatives of air lines in London and later attended the May meeting of the International Public Health Office in Paris. He was able to present papers from Indian Research Fund Association workers on the following subjects: cholera, nutrition, quinine, post vaccinal encephalitis, the population problem, and tuberculosis.

General Bradfield said they had been assured by the Director-General of the International Office in Paris that the papers contributed by India were received with deep appreciation, and there was no doubt that the prestige of their medical research workers stood high in international circles. That position could only be maintained by careful thought, sound judgment and hard work and the Director-General hoped that it might be possible to continue to show to the world in general that India and her research workers were determined to maintain their leading place in the field of humanitarian and scientific endeavour.

During the year an International Conference on Leprosy had been held at Cairo and India had sent seven delegates. The report of that Conference went to show that the anti-leprosy work in India had been planned on sound lines.

In September, an International Conference on Tropical Diseases, with special reference to Malaria, had been organised by the Dutch authorities at Amsterdam. The Government of India had sent two delegates, but unfortunately the international crisis in some measure detracted from what otherwise would undoubtedly have been a profitable meeting. The Government of India were also represented at the International Entomological Congress held recently in Berlin.

The Central Advisory Board of Health would hold its next meeting in Madras on January 9 and 10. Those who were concerned with maternal and child mortality would learn with interest that the special committee appointed by the Central Board to report on Maternity and Child Welfare in India had completed its task. Many of the administrative officers who were present would no doubt be present at the

meeting in Madras and he recommended to their serious attention the Committee's report and the four memoranda which dealt with the other items on the Agenda.

General Bradfield concluded by impressing especially on the younger workers that, when choosing a subject for research, they should always keep in mind the importance of its applicability to the improvement of the health of the people in India. This must always be a primary consideration with the Scientific Advisory Board in making their recommendations to the Governing Body. Scientific research was a matter to which considerable importance was attached both by Governments and the public. Their deliberations last year were the subject of wide interest and the valuable contributions made by workers in India to knowledge of disease were given much favourable comment both in the press and elsewhere.

POSTAL CONGRESS AT BUENOS AIRES

INDIA TO PARTICIPATE

Over 850 resolutions relating to international postal relations will be discussed at the eleventh session of the five-yearly Universal Postal Congress to be held at Buenos Aires in April 1939.

The Indian Posts and Telegraphs Department will be represented by a delegation consisting of Mr. Mohd. Al Hasan, Postmaster-General, Bihar and Orissa (Leader), Mr. H. L. Jerath, Assistant Deputy Director General, Posts and Telegraphs, and Mr. N. Chandra, Assistant Postmaster-General, Bengal and Assam who will also act as Secretary to the delegation.

The delegation will sail from Bombay for London about the middle of February. Prior to their departure the members are likely to assemble in New Delhi for a preliminary discussion. In London they will have an opportunity of discussing with the British and other Empire delegates problems of interest to the Empire, before going on to the Congress at Buenos Aires, which is expected to last for two months. The last Congress was held at Cairo in 1934.

The Buenos Aires Congress will be attended by plenipotentiary delegates from every country which is a Member of the Universal Postal Union.

Regulations governing international postal relations of the various countries will be adjusted to the existing circumstances and changed trade conditions. A large number of resolutions covering a wide field is on the agenda, relating to letters, packets, parcels, samples of merchandise, insured letters and boxes, *petit paquets* and the increasingly important air mails.

POST OFFICE ON WHEELS

AT GARHMUKTESAR

The Indian Posts and Telegraphs Department met the extraordinary demand placed on them by the Garhmuktesar fair by providing a post office on wheels. This is a specially constructed motor lorry fitted up as a posts and telegraphs office with a telephone booth.

The Posts and Telegraphs Department provide facilities at all big fairs. At Garhmuktesar the previous practice had been to set up a camp office in a hut. Last year a camp office with a postmaster, four postmen and a runner was opened in the fair area, as the nearest posts and telegraphs office is about four and a half miles away at Garhmuktesar town and the nearest telephone exchange is at Hapur, 23 miles away.

At Garhmuktesar in the Meerut District a fair is held every year in the month of *Kartik* held sacred by the Hindus, who come in large numbers to bathe in the river Ganges. Tens of thousands assemble there for about ten days. A large temporary town rises up on the broad sands of the river bank, covering as much as six square miles.

The post office on wheels rendered useful service to the pilgrims this year. During the nine days of the fair, it booked money orders, put through 65 telephone calls, and 9 press messages; 71 telegrams were booked and 26 were received. Nearly 6,000 unregistered articles, 47 registered parcels and 133 registered articles, were booked and delivered. The Mobile Post Office was a success. The staff worked in comfort and the public were able to use it with great facility.

It is intended, now that the Mobile Post Office has returned to its headquarters at Delhi, to send it to suitable places within the Delhi Province, and the Ambala and Meerut Divisions.

It is understood that if the experiment proves popular, similar Mobile Post Offices will be constructed, one for each Province in India and placed in suitable towns to serve an area within a radius of 100 to 200 miles.

INDIA FIVE THOUSAND YEARS AGO

RIDDLE OF MOHENJODARO SCRIPT

More light is thrown on the life of the ancients who peopled the Indus Valley in India 5,000 years ago, in "Further Excavations at Mohenjodaro" by Dr. Ernest J. H. Mackay, just published by the Archaeological Survey of India.

As at Ur in Mesopotamia, so at Mohenjodaro, the sea must have been much closer than it is now, and the presence of the Indus Valley seals in Sumerian cities points to trade connections between the two countries.

A good deal of discussion is devoted to the problem as to where Mohenjodaro is to be placed in time, and the conclusion is drawn from the recent discoveries by Dr. Frankfort at Tell Asmar in Mesopotamia that the upper levels in Mohenjodaro were probably contemporary with certain buildings which Dr. Frankfort has excavated and on good evidence has attributed to the Dynasty of Akkad, i.e., 2,500 B.C. From evidence from Susa, the lowest levels to which it is possible to reach, Mohenjodaro may be some 300 years older.

That even in those far distant times, the city's sanitation was carefully looked after, is proved by further evidence obtained of the high state of efficiency of the municipal authorities of the time. A mound has been found just outside the city which has proved to be a rubbish heap; although this is not so far removed from the houses as to comply with modern requirements, it shows clearly that the idea of removing rubbish was already acted upon.

Amongst the interesting finds made as a result of further excavations, are some personal ornaments and toys. Children, it appears, had little carts of pottery pulled by toy bullocks. There are holes in the cart where little sticks were inserted and a wooden axle carrying the earthenware wheels was passed through.

That in ancient times the city must have suffered from at least two floodings by the River Indus is another conclusion reached which receives further confirmation from the fact that the river which was several miles away when excavations started, is now actually threatening to inundate the vicinity of the mounds.

Deep digging is not possible, as the water level in the soil is only about three or four feet below the datum level.

Great care had to be exercised in noting the level of buildings and objects unearthed, as the size of bricks did not vary from period to period and bricks of earlier periods were re-used at a later date. A dump of such bricks was actually discovered in one place ready for the workers to re-use when the city was abandoned.

Details are given in the publication of the buildings, area by area, and of the objects found in each, followed by a discussion of each type of object, pottery, models of persons and animals, stone and ivory vessels, the seals, copper tablets, tools and other metal objects, which throw a flood of light on each aspect of this ancient civilization.

But there is one great discovery yet to be made at Mohenjodaro.

Till now, all the inscriptions found have been on seals, and it may be assumed that these are probably the names of the owners, and so cannot give much clue to the language. With further excavation a larger inscription may be uncovered and then it may perhaps be possible to solve the riddle of the Mohenjodaro script.

The publication is a sequel to the three volumes entitled "Mohenjodaro and the Indus Civilisation", edited by Sir John Marshall. In the present work, detailed accounts are given of the work executed during the four seasons, 1927—31.

Apart from the plates and the text illustrations given, special chapters from scholars who have made a study of the problems, have been added as appendices on the systems of weights in vogue at the place and on the human remains found.

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Indian Information Series

INDEX

Vol. III

July 15 to December 15, 1938

Important Note :

Page numbers marked * refer to the issue dated December 1, 1938. When turning up asterisked items, look first for the date December 1 at the top of the text pages.

Indian Information Series

INDEX

Vol. III, July 15 to December 15, 1938

	PAGE.		PAGE.
Acts—		Archæological Discoveries . . . 80, 83, 84, 164, 258	
Agricultural Produce (Grading and Marking)	177, 184*	Survey	55, 80, 82, 164, 258
Emigration Report on Working in Sind of Indian	60	Army—	
Government of India, 1935	112	Health of, British	74, 75
Indian Aircraft	60	Health of, Indian	74
Indian Finance	10	Innovations	75
Indian Medical Council	176	Mechanised Transport	156, 181
Sea Customs	98	Officers' Pay	23, 71
Unrepealed Central	188, 189	Officers, Training of Indian	113, 114, 123
Afghan Government	109	Rural Reconstruction	95-96
Africa, Indians in	127, 128, 232	(See also Tuberculosis).	
Agriculture—		Assam—	
Agricultural Produce (Grading and Marking) Act	177, 184*, 221	Coal Reserves	236
Credit	222	Indian Emigrants In (See Emigrants).	
Crops in 1937-38	234	(See also Provinces).	
Experiments in Cold Storage	26	Aviation—	
Fruits and Eggs	177	Aero Club of India and Burma	242
Imperial Council of Agricultural Research 18, 24, 69, 93, 97, 170, 177, 160*, 184*, 221, 222, 223, 224, 247, 252		Cargo	155
Institute, Allahabad	133	Empire Mail Scheme	79, 158, 230
Joint Planning	93	Karachi Airport New Building	242
Marketing	18, 177, 220	Mail to Australia	79
Marketing Adviser	18, 25, 26, 159*	Meteorology	189
Provincial Ministers' Conference	220	Pilots	26, 153, 158
Royal Commission on 6, 25, 168, 220, 221, 222		Routes	26
Schemes Financed	27	Services	153, 230
Sugar Committee	18	Training	83, 153, 158
Veterinary Research	97	(See Aeroplane, Aerodromes, Air Force, Airways).	
(See also Cattle, Co-operative Societies).		Bagdad, Report of British Consulate at	61
Aerodromes	112, 242	Bajpai, K.B.E., C.I.E., I.C.S., Sir Girja Shankar	102, 103
Aeroplane Construction	103	Baluchistan—	
Ahmad, Kt., C.I.E., M.L.A., Dr. Sir Zia-uddin	103	Rise of Land Level	64
Air Force, Royal	26, 112, 189	Tribal Unrest	7
Airways—		(See also Education).	
Indian National	153	Banks—	
Indian Trans-Continental	153	Crisis in South India	150
(See also Aviation).		Reserve	150, 222, 235
Ajmer-Merwara	23	Scheduled	150
Andamans, Health in	121	Bengal—(See Provinces).	
Animal Husbandry	15, 246	Bewoor, C.I.E., I.C.S., Mr. G. V.	173*
Deforestation (See Deforestation, Irrigation).		Bihar—(See Provinces).	
(See also Cattle).		Bihta Inquiry Report	77
Anti-Tuberculosis Fund, King Emperor's—		Biochemical Standardization Laboratory	181*
Subscription Lists	85, 94, 110, 149, 157, 182, 245	Blindness	91
Permanent Organisation for	158*	Bokhari, Mr. A. S.	244
		Bombay—(See Provinces).	
		Bose, Dr. N. K.	11

	PAGE.
Botanical Survey of India—	
New Flora Identified.....	78
Report 1936-1937	78
Vegetable Insecticides.....	172
Brabourne, C.I., H. E. Lady.....	1, 72, 98, 151
Brabourne, G.C.S.I., G.C.I.E., M.C., H. E. The	Rt. Hon'ble Lord
	1, 72, 98, 151
Bradfield, C.I.E., O.B.E., K.H.S., I.M.S., Major	General E.W.C.
	176, 171*, 174*, 251
Brayne, C.I.E., M.C., Mr. F. L.	95, 96
Broadcasting—	
Educational.....	244
In Provinces	100
(See also Radio).	
Buddhism—	
Monasteries	9
Relics	84
Bugti, Tribal Unrest in	7
Bureau of Public Information—	
New Appointments	151, 155
Burma—	
Health of Army in.....	74
Poultry	159*
Riots, Questions in Assembly	102
Shan States.....	8
Survey	8, 74
Tin Tungsten Ores From	82
(See also Tuberculosis).	
Butler, G.C.S.I., G.C.I.E., K.C.S.I., Sir Har-	court.....
	250
Calcutta Water Supply.....	169*, 170*
Canadian National Exhibition.....	168*
Cancer	120
(See also Research).	
Cash Certificates, Post Office.....	154
Cater, K.C.I.E., I.C.S., Sir (Alexander) Norman	124
Cattle—	
All-India Show	15, 92
Branding	247
Diseases	97
Drain in India	130, 145
Fodder	159
Treatment of	28
(See also Animal Husbandry, Research, Veterinary Statistics).	
Central Provinces—(See Provinces).	
Ceylon, Indians in	128—129
Chamberlain, Mr. Neville, on European Crisis	139,
	141, 143
Chatfield Committee	154, 163
Chetwode, Bart., G.C.B., O.M., G.C.S.I.,	K.C.M.G., D.S.O., Field Marshal Sir
Philip W.	123
Child Welfare	115—116
Christmas Telegrams	237
Cinchona Plantations	78, 120
Clibborn, C.I.E., Col. John.....	11
Clow, C.S.I., C.I.E., I.C.S., Mr. A. G.	103
Coal—(See Mines).	

	PAGE.
Coffee—	
Indian Marketing Board, London	27
Mysore Scheme	27
Cold Storage, Research in	25, 26
Commerce—	
Commercial Intelligence and Statistics	
Department	155
Department of Government of India	10
Federation of Indian Chambers of	163*
Commissions—	
Federal Public Service	87
(See also Federal Public Service Commission).	
Historical Records.....	66
Royal Agricultural	6, 25, 168
West Indies	173
Committees—	
Central Cotton	18, 24
Central Jute	18, 69, 70, 80
Chatfield	154, 163
Coal Mining	104
Indian Tea Licensing	44
Legislative Assembly, Public Accounts	75,
	81, 83
McKenna Cotton	18
Pacific Locomotive (XR Engines)	77
Communications, Department of...81, 173*, 224	
Co-operative Societies	93, 159
Cotton—	
Association, East India	18, 224
Committee, Indian Central	18, 24
McKenna Committee	18
Marketing	18
(See also Trade Review).	
Customs—	
Baggage Rules	171
Revenue From	155
Czechoslovakia, British White-Paper on	136
Dairying—	
Cold Storage	25
Imperial Institute, Bangalore	246, 247
Milk Recording Societies	28, 160
Milk Substitutes.....	90
Packing Milk	123
Schemes	246
(See also Milk).	
Das, M.L.A., Seth Govind.....	103
Death Duties	112
Debt, Reduction in, Sterling	75
Defence Department—	
British Government's Statement on "De-	
fence Talks"	154
Drug Manufacture.....	224
Expert Committee Appointed	163
Road Transport	26, 157
Services	81
(See also Air, Army, Aviation, Military).	

	PAGE.		PAGE
Deforestation, Dangers of.....	1, 226	Frere, Sir Bartle	173*
Diseases in Provinces.....	118, 225	Frontier, Unrest on the	180*, 182*
Drugs—		Fruits—(See Agricultural Research, Im-	
Control.....	181*	perial Council of).	
Indian Indigenous.....	225	Fuse Powder, Manufacture of	241
Manufacture of	224	Gandhi, Mahatma, on India's Cattle	131
East India Cotton Association	18	Geodetic Report, Survey of India's	63
Eastern Command	74	Geological Survey of India—	
Economic Conference, Provincial.....	221	Burma Tin-Tungsten Ores	82
Economists, Training of Indian	123	Gujrat-Rajputana	189
Education—		On Fossil Remains of Apes in India	24
Adult.....	244	Punjab "Erratic" Blocks	37
Bureau of	109	Water Scarcity in Indus Basin	22
Central Advisory Board of	15, 109, 244	Grigg, K.C.B., K.C.S.I., Hon. Sir James	112, 150
In Ajmer-Merwara.....	23	Speech on Income-Tax Amendment Bill ..	163*
In Baluchistan	52	Gujrat-Rajputana—(See Minerals).	
Mentally Defective Children.....	243	Haffkine Institute, Bombay	16
Scholarships	245	Haji Pilgrims	110, 169
Wardha Scheme of	15, 244	Haveli Irrigation Project	14, 160
Wood-Abbot Report on	15, 244	Head Hunting	63
Zakir Hussain Report on	15, 244	Health—	
(See also Medical, Army, Rural Reconstruction).		Central Board of	117, 225, 252, 254
Eggs—		In Jails	121
Bad Marketing of	159*	In the Andamans	121*
Report on	159*	In Provinces	115, 118
(See also Agricultural Research, Imperial		Public Health Commissioner's Report,	
Council of).		1936	74, 89, 115, 129
Emigrants—		Hedjaz, Pilgrimage to	177*
In Assam.....	174	Higginbottom, Mr. Sam.....	130
Interests of	175	Hore-Belisha, P.C., Rt. Hon'ble L.	71
Emigration Report (Sind)	60	Hospitals, Overcrowding In Mental	243
(See also Labour).		Imperial Library, Calcutta.....	78, 158*
Epigraphy, Report on South Indian.....	80	Income Tax—	
Ergot Preparations	181*	Amendment Bill.....	163*
European Crisis, British White Paper	136*	Report of Select Committee on.....	167
Excise—		Indus Basin, Water Scarcity in.....	22
Conference	7	Indus Valley Civilization.....	164
Revenue	155	Industrial, Research Bureau—	
Factories Act	77	Hygiene.....	118
Faqir of Ipi	107, 180*	Report of.....	67
Federal Public Service Commission	87, 167	Research Council.....	76
Federation	84	Industry—	
Fiji, Indians in	129	Cigarette	93
Finance—		Mustard Oil.....	181
Credit, Strengthening India's	75	Petroleum	236
Fishery.....	169*, 170*	Poultry.....	159*
Flying Clubs	153, 158, 242	Soap.....	76
(See also Aeroplane, Air, Aviation).		Tin-Tungsten Ores.....	82
Food Supply—		(See Trade Review, and Labour).	
Adulteration of	117	Insecticides—(See Research, Trade.)	
And Population	6	Institute Kerala.....	76
Forest—		Insurance, Book 1937, Indian	228
Department	226	International Public Health Office	16
Research Institute	72, 240, 243	Iraq, Pilgrimage to.....	61
(See also Research)			

	PAGE.		PAGE.
Irrigation—		Legislative Assembly—	
Central Board of.....	11, 29, 65, 160, 168, 226	Committee on Public Accounts....	75, 81, 83
Crops.....	12	Government Programme.....	60
Deforestation.....	168, 226	Questions in.....	102, 103, 150
Design of Weirs.....	11, 65	Criticism of President.....	123
Floods	226	Leprosy—	
Linlithgow, Marquess of, Recommendations	168	Research.....	16, 120, 254
Power from Canals	226	Lady Willingdon Settlement.....	16
Provincial.....	11, 12, 226	Librarianship, Training in.....	158
Punjab Department.....	11	Linlithgow Her Excellency the Marchioness	
Punjab Research Institute.....	11	of.....	2, 7, 158*
Report of Central Board of 1936-37.....	65	Appeal for the Anti-Tuberculosis Fund	85, 157*
Research.....	29, 65	Linlithgow, P.C., K.T., G.M.S.I., G.M.I.E., His	
Revenue from.....	12	Excellency The Most Hon'ble The Marquess of—	
Seepage Losses.....	29, 65, 227	Irrigation.....	168
Soil Erosion.....	168	Provincial Ministers' Conference on Agri-	
Study of Rivers.....	160, 226	culture	220
Triennial Review of.....	12	Royal Commission on Agriculture..	6, 168
Works, Capital Outlay on.....	12	Visit to Calcutta.....	165
World's Largest Work.....	12	Winter Tour.....	158*
Jute—		Linseed—	
Central Committee, Activities	69, 80, 122, 238	Exports to United Kingdom.....	21
Marketing Survey of.....	18	Marketing.....	21
Report of Central Committee.....	69	Report on.....	21
Substitutes.....	159	(See Trade Review).	
Technological Research.....	159	Lloyd, C.S.I., C.I.E., I.C.S., Mr. A. H.....	7, 112
Uses of	238	Locust Menace.....	170
(See Trade Review).		Mackay, Dr. Earnest J. H.....	258
Karachi Cotton Association.....	18	Mackenna, Kt., C.I.E., I.C.S., Sir James....	18
Karachi Joint Cotton Committee.....	18	Madras— (See Provinces).	
Karens.....	9	Malaria—	
Karslake, K.C.B., K.C.S.I., C.B., C.M.G.,		Among Troops.....	74
D.S.O., R.A., General Sir Henry—		Control	119
Quetta Earthquake	125	Institute of India.....	16
Kemal Attaturk, British Homage to.....	160*	Questions in Assembly.....	103
Kenya, Indians in.....	127	Mari Tribe.....	7
Kazmi, M. L. A., Qazi Muhammad Ahmad	102	Marketing—	
Khan, Kt., The Hon'ble Sir Muhammad		Defective Methods of.....	159*
Zafrulla	123, 169	(See also Agricultural Research, Imperial	
Kher, Mr. B. G.....	15, 244	Council of, Coffee, Cotton.)	
Khosla, Rai Bahadur A. N.	11	Marshall, Sir John	258
Labour—		Mason, Mr. L	72
Child	22, 77	Maternity Welfare.....	115
Compensation for Injuries.....	81	Medical Council of India—	
Department	81	Act.....	176
Disputes	248	Education	176, 180, 171*, 225
Emigration.....	60	Education Conference.....	171*
Female.....	23, 96, 162*	Relief In Provinces.....	178
In Assam.....	174	Research Workers' Conference.....	250
In Natal, Indians.....	64	Review	110, 170
International Conference.....	22, 50	Services	110, 178
International Conventions Ratified.....	23	Stores Department.....	224
Royal Commission on	77, 81, 118	Women in India, Association of.....	250
Trade Unions.....	34	Medicine, Calcutta Tropical School of	16, 17
(See also Tuberculosis, Mines, Industry).		Megaw, K.C.I.E., C.I.E., Major-General	
		Sir John.....	2

	PAGE.
Meteorological Department.....	189
Milk—	
Exempted From Duty.....	98
Free Supply of	118, 133
Impure Products.....	184*, 223
(See also Dairying.)	
Military Academy, Indian.....	113, 123, 150
Military and Marine Relief Fund.....	34
Military Health Service.....	252
(See also Army, Defence Department.)	
Minerals—	
Wealth of India.....	151, 161*
In Gujrat, Rajputana.....	189
Mines—	
Coal.....	104, 161*, 162*, 236
Education	237
Labour in Coal	104, 111 162*
Measures For Safety in Coal	104, 111
Report of Coal Committee.....	104
Report On.....	161*
Mohenjodaro Script.....	258
Mortality—	
Female.....	17, 91
Infantile.....	90
Muirhead, M. P., Lt.-Colonel A. J., Indian Tour.....	151
Mummy Re-Mummified.....	166
Museum Acquisitions, Indian.....	68
Muslim History, New Light on	78
Mustard Oil.....	181
Nanda Devi Basin Survey.....	162
Natal, Indians In—(See Labour).	
Natarajan, Mr. Jagadish	151
Navalrai, M.L.A., Mr. Lalchand	103
New Delhi—	
Planned Development In.....	75
Water Supply In.....	161
Northern Command.....	74, 75
North-West Frontier—	
Hostilities on	107, 180*, 182*
(See also Provinces).	
Noyce, K.C.S.I., C.S.I., C.B.E., Sir Frank... 18	
Nutrition—	
Milk.....	98
Problems.....	171, 253
Research Laboratories, Coonoor	17, 18, 171
Survey in Provinces.....	171
(See also Research, Food Supply.)	
Ocean Tides Predicted.....	20, 64
Opium, Central Board.....	98
Orissa— (See Provinces.)	
Padaungs.....	9

	PAGE.
Palestine, British Government's Statement of Policy	175*
Paper—	
Manufacture	72, 240
Surcharge Removed on	10
Tariff Board's Recommendations Accepted	10
Prasad, K.C.S.I., Kt., C.I.E., O.B.E., The Hon'ble Kunwar Sir Jagdish 27, 220, 221, 222, 250	
Pinhey, I.A., Captain L.A.G.	124
Population Problems.....	89
(See also Tuberculosis.)	
Postal Employees Rewarded.....	161
Post Office—	
Cash Certificates.....	154
Congress at Buenos Aires.....	254
Insurance Fee	239
Money Orders Service with Austria.....	237
Museum Opened.....	173
On Wheels.....	254
Press Correspondents.....	80
Reply Postcards.....	227
Report for 1937-38	230
Savings Bank	75, 165
Poultry.....	159*
Press—	
Express Delivery.....	80
Telegrams, Loss to Government....	82, 101
Princes, Loyal Messages From... 146, 182, 229	
Provinces—	
(See Vital and Veterinary Statistics, Irrigation, Broadcasting, Mines, Anti- Tuberculosis Fund, Health, Diseases, Nutrition, Medical Relief, Agriculture, Deforestation, Insurance, Labour Disputes.)	
Provinces, Guide To—	
Assam	33
Bengal	35
Bihar.....	38
Bombay.....	40
Central Provinces & Berar.....	43, 52
Madras.....	45
North-West Frontier	48
Orissa.....	51
Punjab.....	53
Sind.....	56
United Provinces.....	57
Public Health, All-India Institute of Hygiene.....	16, 115
Punjab—	
Erratics	37
(See also Provinces.)	
Quetta Earthquake—	
Report.....	124
Reconstruction.....	28, 111, 124
Reconstruction and Survey of India.....	111

	PAGE.		PAGE.
Radio—		Rural Reconstruction.....	116, 117
All India.....	99, 244	Russell, Kt., O.B.E., D.Sc., Sir (Edward)	
Calcutta Station Opened.....	99	John.....	170
Development Programme.....	99	Sam, Sir Hubert.....	173*
Marketing News.....	220, 224	Satpuras, Story of the.....	101
New Licenses.....	155	Satyamurti, M.L.A., Mr. S.....	102, 103
Railways—		Science—	
Bihta Inquiry Report (XB Engines).....	77	Indian Institute of, Bangalore.....	27
Board, Report on Punjab Mail Disaster..	19	Research Scholarships.....	73, 87
Department.....	26	Seaplane Station, Jiwani.....	103
East Indian.....	19, 77	Shami Pir.....	107, 109
Facilities and Arabic Students.....	102	Sharma, Mr. B. L.....	155
Pacific Locomotive Committee.....	102	Shan States, Survey of.....	8
Rajputana—		Shpola Stupa.....	82
(See Minerals.)		Sikkim, Survey of.....	188
Reid, K.C.S.I., K.C.I.E., I.C.S., H. E. Sir		Sind—	
Robert Niel.....	99	His Excellency the Governor of.....	242
Research—		(See Provinces.)	
Agriculture.....	93	Sita's House.....	163
(See Agriculture).		Smuggling in India.....	59
Cancer.....	16, 17	Snail's Age.....	101
Central Hydro-Dynamic Station.....	29, 160	Soap Industry.....	76
Cholera.....	16	Southern Command.....	74
Coffee.....	27	Stanley, Lord.....	168*
Cold Storage.....	26	States—	
Cotton.....	18, 24	Landing Grounds in.....	26
(See also Cotton.)		Provincial Ministers' Conference on Agri- culture.....	220
Dry Farming.....	27	Reforms.....	84
Economic.....	123	(See Veterinary Statistics, Air.)	
Filariasis.....	17	Statistics—	
Forest.....	72, 240, 241, 243	Mineral Wealth.....	152
Fund Association.....	16, 98, 225, 256	Sugar.....	31
Insecticides.....	27, 172	Vital.....	89, 91
Irrigation—(See Irrigation.)		(See also Vital Statistics).	
Jute.....	69	Stewart, K.C.I.E., C.S.I., I.C.S., The Hon'ble	
Leprosy.....	16	Sir Thomas.....	173, 174*
Locust.....	170	Store Department, India, London.....	81
Malaria.....	16	Sugar—	
Medical.....	250	Crop Year 1936-37.....	30
Nutrition.....	17, 90, 171	Marketing Survey.....	18
Nutrition Laboratories, Coonoor....	17, 253	Manufacture.....	30
Plague.....	16	Production in Provinces.....	31, 60
Rice.....	27	Sulaiman, Kt., LL.D., The Hon'ble Justice	
Road Improvement.....	65	Sir Shah Muhammad.....	1
Sugar Cane.....	27	Tariff Board—	
Tuberculosis.....	17	Report on Paper Duties.....	10
Veterinary.....	97	Taylor, Dr. E. McKenzie.....	11
Wheat.....	27	Tea Indian Licensing Committee.....	44
Zoological.....	169*	Telegraphs—	
Revenue—		Carrier System.....	47
Customs.....	155, 171	Loss from Press Telegrams.....	83, 101
Excise.....	7, 155	Report For 1937-38.....	230
From Aviation.....	158	Telephones.....	230, 239
Richardson, C.I.E., Mr. M. R.....	29, 168		

	PAGE.
Thom, Kt., D.S.O., M.C., Mr. Justice.....	77
Thorne, C.S.I., C.I.E., I.C.S., Mr. J. A.....	1
Trade—	
Balance.....	235
Canadian Exhibition, Indian Arts.....	168*
Insecticides, In.....	172
Indian Trade Officer, London.....	168*
Review 1937-38.....	234
Transport—	
Mechanised	156, 181
Refrigerated Road.....	26
Transvaal Land Tenure Acts.....	232
Trinidad, Indians In.....	129
Tuberculosis—	
Among Prisoners.....	4, 5
,, Troops.....	4, 5
,, Workers.....	16
Anti-Tuberculosis Fund, King Emperor's (See Anti-Tuberculosis Fund.)	
Campaign.....	120
Gurkha Soldiers Liable to	4
Housing.....	3, 4
In Burma.....	5
In England and India.....	3, 4, 5
In Urban Industrial Centres.....	16
Nutrition.....	3
Population	6
(See also Research.)	

	PAGE.
United Kingdom, Linseed—	
Imports, From India.....	21
United Provinces—	
(See Provinces.)	
Veterinary—	
Imperial Research Institute.....	97
Statistics	97
Work in Provinces.....	97-98
Work in States.....	97-98
Viceroy, His Excellency The Marquess of Linlithgow.....	6, 158*, 165, 168, 220, 222
Vital Statistics.....	89
For Provinces.....	91
Walton, Mr.....	226
Wardha Scheme of Education.....	15
Waziristan, Hostilities in	107, 180*, 182*
West Indies Commission.....	173
Western Command.....	74
Willingdon Leper Settlement, Lady.....	16
Woolley, Kt., Sir Leonard	55
Workmen's Compensation Act.....	81
Wright, Dr.....	93, 160
Zanzibar, Indians in.....	129
Zoological Survey of India.....	101, 166, 169*
Report of.....	169*

